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How do marketing communications influence nanotechnology sensemaking in B2B sales?

By

Dr Andrew Kristoffer Dean

A Thesis Presented for the Degree of Doctor of Philosophy

2016

Declaration

Unless explicitly stated otherwise, the work presented in this thesis is solely that of Dr Andrew Kristoffer Dean and has not been submitted for examination of any other degree. Material from published or unpublished work of others, which is referred to in the thesis, is credited to the author in question in the text. The thesis is 87,396 words in length. Research ethics issues have been considered and handled appropriately within the Durham University Business School guidelines and procedures.

Abstract

Making sense of technology products is a challenge faced by B2B actors, and one that is particularly acute for high technology products. Sitting in the isthmus between organisations are sellers and buyers who predominantly communicate through talking to position themselves as legitimate sources of knowledge to facilitate selling and buying, while often experiencing identity-based tensions. Research gaps from extant studies show limited investigations examining how sellers and buyers discursively negotiate high technology sales related to their identities to more easily make sense of these often-misunderstood products. This study therefore considers these aspects through the exemplar of nanotechnology, which is regarded as an ambiguous, opaque and complex collection of products, capable of triggering a need for sensemaking, based on the use of marketing-based spoken communication. Throughout this study, respondents who undertake nanotechnology selling and buying within UK companies (SMEs and MNEs) are engaged with via in depth semi-structured interviews. Using an interpretivist case study approach, discourse analysis is used to unpick social structures relating to selling and buying, as the respondents 'see' and discursively construct them. Three main themes are drawn out of this study. The first is the importance of a centralised scientist role identity to guard against the stigma of carrying out marketing activities, where respondents can be quasi-legitimised scientists engaged with selling and buying, while discursively negotiating how to construct these activities. Many sub-themes of power, othering and internal contradictions are explored for this and other main themes. The second theme highlights the potential for using spoken interpersonal marketing communications as a vehicle to induce homophilous discourse, resulting in shared meaning, where sense can be made more easily for complex product functionalities and identities legitimised/delegitimised. The third theme indicates how product simplification and linguistic tools, drawing on cultural references such as science fiction metaphors and militarism can aid in sense given and made between sellers and buyers. Drawing these themes together suggests how the scientist role identity is centrally enacted alongside minor identities of the marketer, seller or buyer to aid in sense giving and sensemaking for high technology products through spoken discursive cultural resources.

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I would like to thank my friends and family for all of their love and support throughout this study. In particular, I would like to thank my Mum for discussing this thesis and findings, especially when she had her own PhD thesis to be working on, which she successfully passed! Congratulations Dr Sylvia Dean!

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Abbreviations

B2B	Business to Business
B2C	Business to Consumer
CEO	Chief Executive Officer
CFO	Chief Financial Officer
cm	Centimetre
CTO	Chief Technology Officer
CV	Curriculum Vitae
DA	Discourse Analysis
EU	European Union
GMO	Genetically Modified Organisms
IMP	Industrial Marketing and Purchasing
ISO	International Organization for Standardization
μm	Micrometre
M	Metre
MBA	Master of Business Administration
MD	Managing Director
MNE	Multinational Enterprise
nm	Nanometre
NPD	New Product Development
R&D	Research and Development
RBT	Resource Based Theory
RCT	Rational Choice Theory
ROI	Return-On-Investment
SEM	Scanning Electron Microscope
SF	Science Fiction
SME	Small to Medium Enterprise
TEM	Transmission Electron Microscope
UK	United Kingdom
USA	United States of America

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Chapter 1. Introduction

1.1. Motivation and Aim

High-technology products can present numerous challenges for organisational actors engaging in communication and decision-making in business-to-business (B2B) selling and buying (Rogers, 2003). As Rogers (2003) argues, these challenges often occur at the isthmus between selling and buying companies, involving the most basic unit of a sales relationship consisting of a buyer and seller (although other organisational actors may be involved). Constructing high technology products through spoken discourse can be particularly challenging due to their complexity, opacity and ambiguity (Ford, 2002). In turn, this can result in discursively based sense- and decision-making challenges in seller-buyer relationships, for what these actors say and how they say it (Tolfree & Jackson, 2008). It can be important to unpick these discursively constructed social and organisational structures (Rouleau, 2005), where tacit knowledge of relevant organisational actors can be neglected (Huisman, 2001; Jameson, 2001). This is often coupled with identifying the use of wider socio-linguistic constructions for high technology, which obfuscate clear meanings about scientific functionalities (Arnall & Parr, 2005). Nanotechnology is an exemplar of this phenomenon (Puurunen & Vasara, 2007) and in this study is a context to study the phenomenon of high technology marketing communication and how sellers and buyers make sense. Briefly, nanotechnology is the commercialisation of the small, where products exist between ten million and one billion times smaller than a metre (although cumulatively they can exist at a much larger scale). Viewing nanotechnology as a composite of different materials types, there are thus three types of nanotechnology products, which are detailed more fully in Appendix A. Briefly these products are split into (1) nanoparticles, which are 'ball' like structures, although other shapes are possible; (2) thin-films, which as the name suggests are minute films, used to coat other products, and (3) carbon based products (nanotubes and buckminsterfullerines). These three classes of material are based simply on the number of dimensions that a material/product has at the nanoscale and its elemental composition. Figure 1.1 shows a depiction

of the size regime for nanotechnology products, with a more in depth discussion of the physical aspects of nanotechnology being provided in Appendix A.

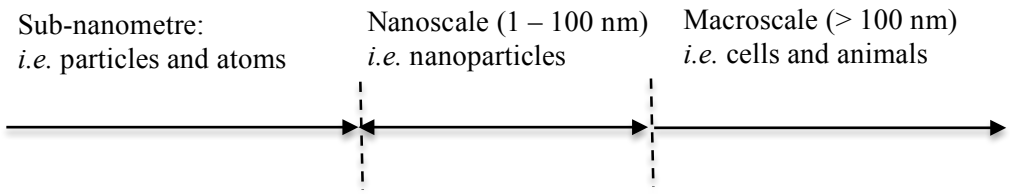

Figure 1.1. Diagrammatic representation of the nanoscale. This figure depicts how the nanoscale fits in with smaller and larger units of measure.

Importantly, from searching the extant literature, nanotechnology appears to pervade 'all' product sectors, and is widely used in cultural references, which are commonly encountered by individuals in their day-to-day lives (Ladwig et al, 2010). High technology and nanotechnology discourses are not only generated and used by organisations engaged in research and development (R&D), and selling and buying, but by societies that these organisations exist within. These organisations must therefore navigate their own technical discourses but also a variety of cultural constructions of nanotechnology, drawing on wider references such as science fiction (SF).

The pervasive move of high technology and in particular nanotechnology products into organisational and social life means there are numerous conflicting discursive product constructions. These discourses are often polarised as positive, and for example where nanotechnology can act as a panacea to all physical problems, or negative for example where nanotechnology will destroy all life converting it into 'grey goo' (Drexler, 1987). The polarisation of nanotechnology discourse is in part facilitated by socio-linguistic constructions from popular culture, often outstripping scientific and commercial potentials, where interest groups promote their own interests and ideologies (Arnall & Parr, 2005). The challenge of complex and competing agendas is shown by Davies (2011: 317) who argues that nanotechnology is a 'postnormal technnoscience' in which 'cultural and linguistic resources' include 'personal experience and expertise, analogies and comparisons, and fiction and popular culture' and are drawn upon by individuals to 'weigh up and evaluate emerging technologies'. Further

highlighting the confusion surrounding nanotechnology, Davies (2011: 323) argues that on the one hand nanotechnology appears as:

> '…fundamentally 'the same' (as previous technologies), and, on the other, that it is in fact radically different from anything that has gone before. These themes are, of course, entirely in opposition to one another'.

The disparity and constructions of high technology and nanotechnology is based on what Davies (2011: 317) suggests is the individual's 'experience, expectations and desires to create meaning' through the use of linguistic 'toolkits', or as Swidler (1986) argues cultural resources, also potentially viewable as toolkits (more fully explored in Section 2.2.5). These toolkits are part of the discursive potentiality for individuals, including sellers and buyers to give and make sense of an increasingly complex and uncertain technological world (Sardar, 2010). While these toolkits are briefly explored for nanotechnology in business-to-consumer (B2C) arenas, attention from B2B scholars for dyadic seller-buyer relationships in the context of nanotechnology is limited. Within dyadic relationships is the question of how individuals construct their identities and how spoken discourses are influenced by identities. More explicitly, does the enactment of particular identities result in heterophilous (culturally dissimilar) or homophilous (culturally similar) discourses, reflecting who people believe themselves to be? While homophilous communication can aid in dyadic closeness and an increased likelihood for product purchasing in B2C arenas (Loeve, Vincent & Gazeau, 2013), before this study was undertaken, it was not known, what effect, if any, toolkits drawing on cultural references would play in these B2B seller-buyer relationships. Studies such as this, interrogating how relationship closeness can be influenced by identities aids our understanding of how individuals make sense of themselves in context to others (Ybema et al, 2009), particularly in terms of how social actors discursively position themselves in marketing/purchasing relationships (Ellis & Ybema, 2010).

Understanding the process of sensemaking is important for how sense is communicated (given) from a seller to buyer and how the recipient of sense

undertakes to discursively make sense of the incoming communication, potentially enabling a greater understanding of aspects such as purchasing decision-making (Hennneberg, Naude & Mouzas, 2010; Castells, 2000). Not surprisingly, sensemaking is often heavily utilised in knowledge intensive and high technology B2B relationships, and where there is ambiguity, 'managers cannot just capitulate in front of these confusing structures' (Hennneberg, Naude & Mouzas, 2010: 355). Rather, they 'must wade into the ocean of events that surround the organization and actively try to make sense of them' (Daft & Weick, 1984: 286).

Pulling the aspects discussed in this section together, and building on extant literature and my sensitisation to B2B nanotechnology selling and buying from having worked in the sector (more fully explored in Section 3.4.4), the following section details the research question, research aim and research objectives.

1.2. Research Question, Research Aim and Research Objectives

To address the research gaps identified in the previous section, the following research question guiding this study is:

> How do spoken marketing communications influence sense given and made between sellers and buyers, through the use of discursive co-constructions and identity claims, in B2B nanotechnology sales?

Building on the research question and extant literature, the research aim used to drive the research agenda and questions during the respondent interview stage is:

> To examine how sellers and buyers discuss their use of spoken marketing communication to give and make sense of nanotechnology products and indeed of themselves.

Within this aim were three research objectives, grounded from an initial literature search and my emic sensitisation to the sector:

1. Through a literature review and examination of current practice, to understand how sellers and buyers use marketing communications to construct their role identities in nanotechnology selling and buying;
2. Informed by a) above, and through a literature review and examination of current practice, to understand how sellers and buyers use marketing communications to give and make sense of nanotechnology products; and
3. Informed by a) and b) above, and through a literature review and examination of current practice, to draw out the linguistic tools used to give and make sense of nanotechnology.

1.3. Research Methodology

This study is based within an interpretive discourse analytic case-study paradigm (described in greater detail in chapter 3), and investigates how B2B seller-buyer spoken marketing communications influence sensemaking of nanotechnology products.

Semi-structured in depth interviews carried out with thirteen respondents (three MNE sellers, three MNE buyers, and seven SME seller-buyers), actively engaged in biological nanotechnology selling and buying, are used as the basis for this study. Respondents are worked with in this study based on their organisational activities and role identities as sellers and buyers. The sample is limited to the UK geographically due to my ability to access respondents, convenience, and this type of commercial activity being prominent in the UK. An expanded view and explanation of the aspects mentioned in this section is carried out in Chapter 3.

1.4. Significance and Contribution of the Research

This study deepens our understanding of the discursive processeses related to the diffusion of innovation by critically exploring the language that scientist sellers and buyers employ to facilitate sensemaking in B2B nanotechnology marketing communications. Unpicking this area shows that these individuals embedded in an inter-organistaional isthmus are acutely aware of the difficulties in discursively constructing high-technology products and making sense.

Sensemaking is pivotal for organisational life (Weick, 1995), with talk between individuals being a primary vehicle for sensegiving and sensemaking (Gioia & Thomas, 1996). Focusing on B2B activity, sensegiving and sensemaking are pivotal aspects to better understand organisational life and to derive shared meaning for easily misunderstood products within sales relationships. While it is perhaps easy to construct sensegiving and sensemaking as two separate entities, Hopkinson (2001) suggests that these two aspects are better viewed as 'two sides of the same coin'. Thus, they are both present in seller-buyer relationships, in an ongoing process of sense flowing between both individuals. Focusing on discursive elements enables greater attention to be paid towards understanding the richness and importance of talk in these relationships for how sellers and buyers claim to make sense, and as such is fundamental to this study. Coupled with this is the potential to examine individual and shared narratives for how sense is made, acknowledging the past while looking to the future (Huisman, 2001). Drawing on the comment of Rouleau (2005: 1415), this study set out to understand the nuances of discursive life in sales on the basis that 'in a complex world where competitive advantage lies in details, symbolic resources and intangible assets should definitely be investigated'.

Within this B2B study, and drawing on extant literature, three main themes have been drawn out that contribute to the literature. They include (1) the scientist seller/buyer, (2) the use of spoken communication in the sales relationship, and (3) discursive sensemaking tools. It is important to understand that these three themes build on each other, and support processes for how sellers and buyers in this study negotiate product sales, to discursively give and make sense of

nanotechnology products. This section seeks only to briefly highlight the significance and contribution of this study, whereas Section 2.6 ‘Research Gaps and Significance of this Study’, draws on the literature review to give a more detailed view of what the research gaps are, and why this study sought to fill them.

The first main contribution focuses on the research gap associated with sellers and buyers within B2B high technology, and in particular nanotechnology sales relationships. The importance of science is demonstrated, as a vehicle to promote the value of the scientist engaging in selling and buying and as a means to legitimise talk. This is demonstrated through respondents constructing themselves as ‘scientist’-sellers, or ‘scientist’-buyers, with legitimisation for all organisational activities being argued as linked to the scientist role identity. Science is thus a means to construct powerful discourses to persuade others of the legitimacy of discourse used by sellers and buyers, which finds prominence within the seller-buyer relationship, and if not successful can result in a high state of anxiety for sellers and buyers. As is later discussed (Section 2.4), with sellers and buyers having similar backgrounds, they appear to engage in co-authored discourses (Shotter & Cunliffe, 2003) to strengthen their role identities to facilitate selling and buying. These aspects are important due to limited understanding in extant literature for how ‘scientists’ behave outside of academic settings for how and why they construct their role identities and discourses.

The second main contribution unpacks the processes of selling and buying as constructed by the respondents to highlight the value of spoken communication between sellers and buyer, which is a commonly held belief in B2B (Slater, 2014), to negotiate the discursive sales space for nanotechnology products. This nuanced examination shows how face-to-face talk is claimed to be pivotal for selling and buying, and the ‘only’ communication style used. It appears that this is due to the flexibility and rapidity of speaking in person in comparison to other methods of communication. It also highlights that whatever is said is in effect ‘off the record’ and resulting in low accountability. Importantly, as with many other areas discussed by the respondents, discursive deceit is shown, where loyalties are continually renegotiated. Critical to selling and buying is the spoken

language used, with the aim being to produce homophily, where sellers and buyers use discourse to jointly position themselves to aid in selling and buying. As such, persuasion is a commonly used discursive tactic to select preferred views of products and constructed rationales for these preferences. Creating a shared negotiated discursive space is therefore a way to reduce conflicts in selling and buying, where disccourse can aid in confirming promoted positions.

The third main contribution shows the importance of talk between buyers and sellers to give and make sense of nanotechnology products, and the discursive and cultural resources drawn on to aid in sensegiving and sensemaking. This has been an under examined area in B2B, for sellers and buyers with scientist role identities, and as individuals who consider themselves to have 'the knowledge' about the products they are buying and selling. While discourse is predominantly homophilous, and in principle facilitates sales, the opaque and complex nature of nanotechnology products, at times challenges this notion. Thus an exploration is made into the use of language where product technicality is simplified, negotiated, and changed as necessary to enable sensegiving and sensemaking. Coupled with this is the ability of technically knowledgeable sellers and buyers to give and make sense through linguistic tools drawing on cultural resources, and for example an anti-cancer treatment that works like a 'laser fired in Star Trek'. In practical terms, this final contribution draws on many previous aspects discussed throughout this study, to provide not only more of a holistic overview but one honing in on nuanced parts of organisational life constructed through language.

This study highlights how spoken marketing communication can be used in dyadic seller buyer relationships to position role identities and influence sensemaking through the use of linguistic tools and cultural resources, where preferred product view is favoured over what might be considered a 'technically correct' view. While this section has sought to briefly position the significance and contribution of this study, the literature review goes onto highlight relevant literature, leading to Section 2.6, where the research gaps are more clearly identified alongside my rationale for targeting them.

1.5. Thesis Outline

Chapter 2. Literature Review

This chapter focuses on the extant literature supporting this study. In particular the four main B2B-related areas of (1) marketing communication (2) sensemaking, (3) identity, and (4) co-construction of meaning are examined in relation to high technology and nanotechnology. There is a predominant focus towards how spoken communication is used to give and make sense of high technology products. This includes a consideration of the use of wider cultural influences drawn on by buyers and sellers to aid in sensemaking from outside the sales relationship.

Chapter 3. Methodology

This chapter details and examines the research methodology and interpretive case study paradigm that this study operates within. Utilising a social constructionism stance towards developing meaning within social and organisational structures (the nanotechnology seller-buyer relationship) is also discussed. Finally, the use of a discourse analytic method for unpicking semi-structured in depth interviews with sellers and buyers is detailed.

Chapter 4. Findings and Analysis I: Science

This chapter introduces the findings and analysis from the interview stage, worked from transcribed and analysed data via the discourse analytic method. The importance of the scientist role identity is discussed, as well as how being a scientist can position spoken discourses as true, aiding in selling and buying. Building on these aspects, the ability of sellers and buyers to increase their power and persuasiveness in sales relationships by linking their stances to science is scrutinised. With all sellers and buyers being self-identifying as scientists working in B2B organisations, the ability for these respondents to cycle between

situating themselves as scientists, scientist sellers and buyers, and even managers to strengthen their discourses is highlighted.

Chapter 5. Findings and Analysis II: Selling and Buying

This second findings and analysis chapter builds on chapter four. An examination is made of respondents carrying out selling and buying, particularly for the way that they engage in seller-buyer dyadic relationships. The currency of these relationships is spoken marketing communications used to construct nanotechnology products. Not surprisingly, varying claims are made about the impact of different communications used for persuading in selling and buying, as well as how they are used to avoid conflicts.

Chapter 6. Findings and Analysis III: Sensegiving and Sensemaking

This third findings and analysis chapter builds on chapters four and five. An in depth examination is made of how sense is given and made through marketing communications. A pivotal aspect of the communications used, is claimed to be whether and how complex high technology product functionalities can be simplified through the use of linguistic tools. Finally, all of the previous themes are examined against how sellers and buyers make decisions using this information.

Chapter 7. Discussion and Conclusions

This chapter pulls together all of the research findings and analyses, contextualising them against extant literature. Building on these aspects, contributions for the knowledge base derived from the research question, research aim and research objectives are highlighted as well as scholarly and managerial implications. After this summing up stage, a consideration of my role as a researcher is made including limitations of this study, and finally the

direction for future research. Due to the increased trust developed between the respondents, and myself, further future work is suggested based on this study, as well as how this study has already impacted on respondent organisations.

The following chapter, the literature review starts the consideration of extant literature, and how it is used to drive this study.

Chapter 2. Literature Review

2.1. Introduction

This literature review chapter explores several key areas of importance to this study driven by the question: 'how do spoken marketing communications influence sense given and made between sellers and buyers in B2B nanotechnology sales?'

The literature review is split into the four main areas of (1) technology companies, products and marketing, (2) sensemaking, (3) identity and (4) co-construction of meaning. In each of these areas, theories and extant work are examined to elucidate aspects relevant to this study. A particular focus is placed on B2B high technology marketing through personal selling, resulting in sensemaking between sellers and buyers in dyadic relationships. As an exemplar of complex, uncertain, opaque and pervasive products with a potential to trigger sensemaking, nanotechnology is examined in this study. Linguistic tools including metaphor and cultural resources such as SF are considered for their ability to aid in sensemaking of nanotechnology products. A particular emphasis is made for how these tools and resources are used to simplify complex product functionalities brought to life through seller and buyer discourses.

The following section explores the extant literature relevant to and driving this study for the area of technology companies, products and marketing.

2.2. Technology Companies, Products and Marketing

Although high technology R&D and commercialisation is a widespread practice, understanding what can be considered high technology products and what constitutes high technology companies developing these products is not an easy task. In an attempt to pull together a useable and workable construction of these companies an argument has been made that lower or standard technology companies create products to solve what might be considered 'everyday' or

'routine' buyer needs (Noel & Glazer, 1987). Stepping beyond this, companies constructed as high technology, tend to engage with 'cutting-edge or advanced technology' products (Slater, 2014: 9) orientating product development towards greater levels of innovation. These concepts are overly simplistic however, and with time there is a propensity for what was considered high technology to slip into being perceived as a standard or lower technology. The nature of high technology products and companies can mean that discourses regarding these phenomena are less well established. This can complicate the way that discourses are constructed and engaged with by organisational actors, as well as how sense is given and made about products (Gioia & Thomas, 1996). These factors are complicated by companies that carry out high technology R&D often being small, with low levels of resource to adequately deal with these challenges, where internal and external drivers frequently change. All of these aspects create challenges for how individuals within these companies develop and work with complex emerging and not easily understood technologies (Sperry & Jetter, 2009), as well as how they engage in selling and buying activities. More than this though, there is the day-to-day challenge for how these individuals discursively construct and make sense of their organisational lives.

These factors can mean that there is a great potential for failed product commercialisation. This can be worrying for high technology companies, where, as Griffin and Hauser (1996) argue, the desired outcome of a high technology company is to develop and commercialise successful and profitable products within a reasonable time frame. For high technology companies this challenge can be compounded by development and commercialisation times being 'long and tedious' (Haverila, 2013: 4), where a large emphasis is placed on new products and their successful commercialisation. If not adequately managed, products entering the commercialisation stage can fail or low product adoption rates can occur, which in can in turn have disastrous effects on these companies, necessitating fit-for-purpose marketing communications strategies to facilitate sales (Kotler, 1994). Not surprisingly, developing and commercialising innovative products has been stated as being vital for the survival and growth of high technology organisations (Yalcinkaya, Calatone & Griffity, 2007).

The intensity of product focus, and fear of commercial failure within high technology organisations extends into the way that marketing communications are used in sales to promote perceived technological benefits to potential buyers as a means to legitimise and differentiate products (Kotler, 1994; Kustin, 2010). Benefits promoted by selling firms typically include uniqueness, superiority, compatibility, performance, cost to user and a customer support-base (Zirger & Maidique, 1990; Yap and Souder, 1994). Discourses used by sellers in marketing communications are however shown to have variable effects on the way potential buyers construct and make sense of products (Herrera, López, & Rodriguez, 2002). For high technology companies communicating technological aspects of products, there is often a limited consideration for how confusing technological functionality is for sellers and buyers engaged in sales. In comparison to other B2B areas, communications used by technology intensive companies, often high technology orientated are cited as being relatively neglected (McKenna, 1985; Shanklin & Ryans, 1987; Autio et al, 1989; Lumme, 1994, Haverila, 2013). This is unfortunate, as Yap and Souder (1994) argue that the communicated aspects of high-technology products are often pivotal for how buyers make sense and decisions about products. Unpicking these aspects, which are of interest to this study, the following section examines nanotechnology products.

2.2.1. Nanotechnology Products

Over the past decades, it has been suggested that nanotechnology will be one of the four major pervasive technology sectors of the 21st century (Delgado, 2002, 2006, 2008). Speculation is that nanotechnology in particular will be able to act as a 'revolutionary' platform for many other sectors and technologies, resulting in numerous new products being brought to market (Zonneveld, 2008). Physically, nanotechnology products are either composed entirely of nanotechnology components or mixed with larger non-nanotechnology components, with a more in depth discussion of these aspects being given in Appendix A. The small size of materials within the nanoscale can enable numerous physical characteristics not seen with larger scale products. As materials decrease in size, their internal area, relative to the surface area

decreases, meaning that there is relatively more surface area, which is active to the intended application, and less material wasted from the internal area, in turn bringing economic advantages. Beyond this aspect, the small size of nanotechnology materials enables these products to target new applications; for example, suntan cream, which if composed of nanoparticles does not give the skin a white coating like traditional larger scale materials, and can be seen as more aesthetically pleasing to the consumer. These and many other properties can be sought after propositions for high technology companies seeking to increase their advantage over competitors and to target customers. Although nanotechnology products may appear promising, the area is filled with technology-laden language and potentially confusing socio-linguistic constructions (Baker & Aston, 2005), which continually creates challenges for individuals seeking to market these products.

Taking a simple stance and looking at the word nanotechnology, this prefix nano refers to small high technology products, between ten million and one billion times smaller than a metre. These minute products may make up larger products, such as nanoscale silver being incorporated into a bandage for example. Boholm and Boholm (2012: 16) argue that nano has many common, scientific, technological and business meanings, extending beyond a scientific definition of size, which can create sensemaking problems. Some of these non-scientific constructions include:

> ‘[1] Very small X, where X is an object that is small, for example, nanocar, an activity that is short, for example, nanosemester, or an activity involving small objects, for example nanoblog. In none of these cases is the relevant scale of description that of nano in the technical sense of billionth part;
> [2] Nanometre-sized X, where X is an object for example nanoparticle;
> [3] X operating at nanoscale, where X is an activity, process or agent, for example, nanoscience, nanoanalysis and nanoresearcher; and
> [4] Nanotechnological X, where X is an object resulting from some activity operating at the nanoscale but not necessarily itself

nanometre sized. For example, nanoclothes – which can often mean both nanometre sized and nanotechnological (containing for instance nanotubes)'.

These other socio-linguistic constructions suggest that the prefix nano can have a variety of meanings, and while predominantly small, it does not necessarily have to be between one billion and one ten million times smaller than a metre, using non-scientific views. It is not just the word nano that can be viewed in a wider socio-linguistic sense but also the word technology. As a brief example, while technology can be seen to be ushering in a silver bullet to heal societal ills, it can also be perceived as unnatural, potentially catastrophic and generally damaging to mankind (Slovic, 1987, 1992). Thus, both constituent parts of nanotechnology can have varied meanings using a non-scientific view. Importantly, these non-scientific constructions do not sit in isolation from scientific views, where conflicting opinions can arise for how to perceive nanotechnology. For example, religious beliefs can result in negative views of nanotechnology, particularly in the public (Ho et al, 2010), and result in a lack of acceptance and even resistance to such emerging technologies (Brossard et al, 2009).

Nanotechnology has not escaped explicit and implicit links to prior technology based narratives, which at times have been negative, as with genetically modified organisms (GMOs) (Sheetz et al, 2005), Thalidomide (McBride, 1961) and asbestos (Poland et al, 2008). These narratives or stories can make it difficult to promote positive perceptions of paradigm shifting high technology products in sales, with little academic consideration so far for B2B selling and buying.

Addressing the aspect of scientific literacy, Pecora and Owen (2003) find that there can be a difference in the way that individuals comprehend and construct scientific meaning based on their level of scientific training, with it not being clear that increasing literacy increases sense made. When considering training or education, it is helpful to regard these aspects as immersive processes, rich in narrative, stories and discourse about scientific principles, terminology and with their own set of biases. For individuals having engaged with scientific training and education, there is no 'one-size-fits-all', as individuals may have quite

different experiences, thus targeting and constructing information differently based on their experiences. Munshi et al (2007: 433) state that:

> 'Boundaries are not simple demarcations along public lines, inasmuch as there are as many conflicting conceptions among nanoscientists themselves as there are among journalists, business leaders, and social-humanistic researchers.'

This suggests that there is no singular view held by a 'scientist', 'technologist', or 'manager' etc. where even individuals self-identifying in the same way may construct and discuss things differently, drawing on different knowledge sets. However, there can still be similarities in the way that similarly self-identifying individuals draw on and share information, relative to their background. For example, failure is something rarely acknowledged by scientists, and can be taken to an extreme where there is an unwillingness to be sceptical about nanotechnology being a general panacea (Roy, 2004). These issues can be coupled with scientists rarely raising health and safety issues about technology products and communicating only perceived positive aspects (Robichaud et al, 2005). It can be argued that part of the constructed narrative or story of nanotechnology by scientists is self-perpetuating and somewhat circular, as scientists often seek other scientist's opinions at the expense of other stakeholders. Collins and Evans (2002) link this to the 'right to talk', which refers to a belief that scientists often hold, that only other scientist's opinions on scientific matters are valid.

For individuals seeking new information, Ladwig et al (2010: 52) suggest that 'people have been progressively turning to the internet for science news and information'. According to Horrigan (2006), more than two-thirds of USA adults are currently using the internet to learn about technologies, with it being the main portal for public access to information about nanotechnology (Ladwig et al, 2010). For individuals carrying out Google based nanotechnology searches, they will find a high-level of medical contextualisation (Ladwig et al, 2010). This can enforce a positive perception of nanotechnology as beneficial to mankind, for

individuals carrying out the searches, but also in the sense they communicate to others about nanotechnology.

Over the past decades and at present, scientists and policymakers assume that higher levels of scientific literacy enable individuals to more easily perceive misinformation and false claims (Bodmer, 1985). This is coupled with academic scientists believing that a higher level of scientific understanding in the public will result in greater levels of support for scientific research (Miller, 1998, 2004). These assumptions are not without foundation, as studies show that higher levels of public scientific knowledge can be positively correlated with their perceptions of scientific issues (Nisbet, 2007) and attitudes towards science and technology (Brossard et al, 2009). However, some studies show that 'factual' scientific knowledge has little or no relationship with public acceptance of new technologies as there are also other factors as described in this section that can also influence decision-making (Priest, 1994). The next section expands on these aspects through the framework of diffusion of innovation.

2.2.2. Diffusion of Innovation

Technology adoption is often considered a critical part of R&D and sales, with one of the more popular business models used to consider this aspect in both B2B and B2C arenas being the 'Diffusion of Innovation' model developed by Rogers (1962, 1965). It is argued that this model influences the concept and practices of innovation management and marketing (including high technology products) (Wonglimpiyarat & Yuberk, 2005). Probert et al (2013: 1131) state that 'technology adoption is relevant to distinguish the various characteristics of potential buyers of technology over time'. There are four elements to the diffusion of innovation model where 'diffusion is the process by which (1) an innovation (2) is communicated through certain channels (3) over time (4) among the members of a social system' (Rogers, 2003: 11). Pivotal to the uptake and adoption of new products through selling and buying, are sellers and buyers who communicate information between each other, as well as to their organisations (Rogers, 2003). Simakova and Neyland (2008) have addressed this

to show the importance of discursively marketing new technologies through spoken communication using stories, relevant to the individuals receiving them. As Simakova and Neyland (2008) argue, these stories must be compelling, meaning that the listener must be able to see themselves as part of the story in a believable and advantageous way, through perceived value of products being discussed.

Product innovation can be defined in different ways. For example, Schumpeter (1947), Pavitt (1984) and Tidd and Bessant (1997) define innovation as the process of developing new ideas into marketable products/processes. Rogers (2003: 12) however defines innovation as being 'an idea, practice or object that is perceived as new by an individual or other unit of adoption.' For diffusion of innovation studies, it is not important that an innovation is new for it to be regarded as an innovation. Thus, in this study, a product is an innovation on the basis that it is new to a seller or buyer, which necessitates their need to potentially make sense of a product through discourse. An individual having come across an innovation previously does not exclude the newness of an innovation. It can still be considered an innovation if that individual has not adopted either a favourable or unfavourable attitude towards it, and as Rogers (2003: 12) argues 'Newness of an innovation may be expressed in terms of knowledge, persuasion, or decision to adopt'. Thus, in the context of this study, there is still the potential for sense to be made based on further communicated aspects of a previously encountered product.

In high technology, there can be substantial differences between past and new innovations, with new innovations potentially being regarded as radical (Christensen & Rosenblom, 1995), disruptive (Christensen, 1999) or system innovations (Kemp, Schot & Hoogma, 1998). The main difference between incremental innovations and radical, disruptive or system innovations are that incremental innovations typically integrate into previously adopted innovation systems more easily, requiring less sense to be made through more readily available and accessible discourses. This can be linked to lower levels of buyer understanding needing to be developed, as buyers already have a basic understanding of similar products (Rogers, 2003). An example of this from the

past decade could be the software available on mobile phone devices. An incremental innovation could be an increase in the functionality of a calculator programme, inherent on all mobile phone devices, with it being regarded as incremental as organisational actors have experience of calculator software on these devices, and others for a number of years. A radical or disruptive innovation, could be the ability to download an 'app' onto a mobile phone device and use the phone as a satellite navigation system for the first time, with the radical or disruptive element being due to the phone acting as an entirely different electronic device.

The wider infrastructure aspect of innovation development is emphasised by Van de Ven et al (1999: 7) who states that: 'the time, costs and risk incurred by firms in developing an innovation are inversely related to the developmental progress of building an infrastructure for the new technology.' This means that the greater the innovation novelty, the greater the potential for difficulties of integrating an innovation into a buyer's system, which in turn increases the chance of innovation/product failure, and can increase the inability of a buyer to make sense of new innovations. Not only is there a problem for the sense being made but also how marketing communications can be used to give desired sense.

For diffusion of innovation studies, there are various levels at which an individual may know of a technology innovation. In practice, upon an individual (potential adopter/buyer) becoming aware of an innovation, the individual may experience uncertainty about the product, which may result in them trying to learn more about the product and reduce their uncertainty. Rogers (2013: 14) suggests that examples of questions commonly asked in these situations are:

> 'What is the innovation?" "How does it work?" "Why does it work?" "What are the innovation's consequences?" and "What will its advantages and disadvantages be in my situation?"'

This is an opportunity for a seller to promote the selling company's view of the product. For high technology, the challenge of promoting products can be multifaceted but in many ways depends on the communications used by the

seller. The next section therefore considers technology marketing to examine marketing theory for technology and high technology products.

2.2.3. Technology Marketing

For sellers engaging in high and low technology marketing there are numerous methods for communicating about products. Conceptually, there are two types of market strategies that are broadly recognised for new technology products: market pull (Schmookler, 1966) and technology push (Schumpeter, 1947). Market pull strategies focus towards market and customer needs where there is 'opportunity recognition' (Schmookler, 1966), based on the concept that companies find and exploit perceived market opportunities (Kirzner, 1979). Technology push strategies focus on the idea that innovations are pushed through R&D, into sales and into the market, without proper consideration of whether it satisfies a current user need (Martin, 1994). Wonglimpiyarat and Yuberk (2005) argue that these two market strategies are the driving force in the process of innovation and commercialisation. Technology push is perceived as being greater during the initial stage of technology adoption; with market pull increasing as technology push decreases (Mowery & Rosenberg, 1979). Irrespective of the type of market strategy pursued, marketing is argued as being a core competence for technology companies and sellers (Tschirky & Escher, 2000).

High technology companies are often based within the area of technology push, which can create challenges during the marketing stage (with products potentially having a low buyer adoption rate), as marketing can be neglected until the product is perceived as ready for commercialisation (Rogers, 2003). There can also be a somewhat absolutist view of technology push commercialisation from technologists, as stated by Rogers (2003: 7):

> 'Many technologists believe that advantageous innovations will sell themselves, that the obvious benefits of a new idea will be widely realized by potential adopters, and that the innovation will diffuse

> rapidly. Seldom is this the case. Most innovations in fact, diffuse at a disappointingly slow rate, at least in the eyes of the inventors and technologists who create the innovations and promote them to others'.

This view is often derived from the origins of many high technology products being from within R&D. As Slater (2014: 4) argues, 'as a result, the role of, and need for marketing is often misunderstood or downplayed in organizations'. This can mean that technology companies suffer from low levels of technology purchasing and adoption, which can necessitate greater scrutiny over marketing communications used to sell. Within technology marketing is the potential to (1) promote the technology itself, which is intangible, or (2) promote the related products and services, which are tangible (Easingwood, 2006). For tangible marketing including products, there is a greater likelihood of communicating known applications to potential buyers, which can aid in buyers making sense of products (Naveen, Swami & Pal, 2006). Marketing focusing on intangible technology has the challenge of communicating the intangibility in a comprehensible way (Ford & Ryan, 1977), with less academic attention having been paid to this area (Malhotra, Citrin & Shainesh, 2004). Ford and Ryan (1977) argue that for intangibly based technology marketing, sellers often have difficulties in understanding what they are selling, and locating decision-makers in buying companies, as well as there being challenges for operating in confidential relationships. This can bring the further challenges to communicate about a product to a potential buyer, when it is not possible to show it being used in other companies, due to few or no products having gone to market (Easingwood & Koustelos, 2000).

Easingwood and Harrington (2007) emphasise that companies need to use marketing communications to target the mainstream market beyond early adopters to increase the potential for commercial success. The issue of adoption of products can be more complicated for high-technology products, as the innovations are often outside of potential buyer cognitive, social and linguistic frames, thus making their ability to make sense and understand the product/technology more challenging (Beard & Easingwood, 1996). This is

particularly the case for ‘unknown’ products, where high technology marketers deliberately promote technological innovation, but can create obfuscation.

There is perhaps a fundamental challenge facing high technology companies, which is based upon the difficulty described by Slater (2014: 4):

> ‘Technical people may have a hard time becoming market focused and understanding how to interact with their nontechnical customers. Marketing activities are sometimes either an afterthought to the product/technology development process or are not accorded the same importance as product/technology development. Cross-functional collaboration between engineers and marketers is a necessity but is extremely difficult to implement well. A further complication is that many people hired to do “marketing” lack an understanding of how to market in high-tech industries’.

Importantly, and according to the research of Haverila (2013: 4), ‘promotional tools in the context of industrial marketing, advertising, publicity and sales promotion have been discovered to have relatively low importance, and are more widely used in consumer marketing’. Personal selling, however, is an important aspect of high technology marketing (Rosen et al, 1998; Haverila, 2013), especially in industrial (B2B) contexts, and as such is considered in the following section.

2.2.3.1. Personal Selling

The importance of personal selling in high technology B2B markets is widely recognised (Slater, 2014) with many different strategies being utilised to achieve product sales. In part, the greater use of personal selling within B2B and in particular high technology markets is linked to lower buyer numbers in B2B markets in comparison to B2C (von Hippel, 1986). Niche technological characteristics of products also means that there is a greater return for using personal selling, where sellers can communicate product understanding to buyers

(Slater, 2014), resulting in deeper relationships with buyers. Before examining personal selling theory, it is worth noting that according to Ames and Hlavacek (1984) personal selling is often perceived as having the highest cost per contact in comparison to other sales tools.

Technology selling is often complicated by complex product characteristics, which can make it important for technology companies and marketers/sellers to identify and target specific potential buyers to increase the potential of commercial success. However, identifying potential buyer needs is not without challenge as it necessitates an understanding of multiple aspects and the needs of the buying organisation often through buyer discourse. Freeman (1982: 109) expands on this by stating:

> 'Innovation is essentially a two-sided or coupling activity...on one hand, it involves the recognition of a need or more precisely, in economic terms, a potential market for a new product or process. On the other hand, it involves technical knowledge, which may be generally available, but may also often include new scientific and technological information, the result of original research activity. Experimental development and design, trial production and marketing involve a process of 'matching' the technical possibilities and the market'.

There have been a wide variety of studies on the effectiveness of personal selling, with sales techniques ranging from 'canned' material (Jolson, 1975) through to in-depth knowledge based relationship selling (Szymanksi, 1988). Traditional sales approaches have often been regarded as manipulative as the product is the focus of the sale, not the buyer's needs, objectives, desires or hopes (Graziano & Flanagan, 2005). Probert et al (2013: 1132) state that 'the process of sales is structured around this objective and the role of the sales person is to lead the conversation and tell customers what they need and don't need'. Two-way communication and establishing a close dyadic relationship is arguably less important in such cases, as the emphasis of the traditional approach focuses on one-way communication from seller to buyer.

Other approaches such as the consultative selling process (also known as adaptive sales (Delvecchio et al, 2004)) focuses more on understanding and defining a buyer's needs and objectives (Hanan, 1986). This can also seek agreement from a buyer that their needs are being targeted by the seller and are required needs (Graziano & Flanagan, 2005). In approaches such as this, there is a greater requirement for the seller to understand the buyer's business, purchasing structure and motives for making purchasing decisions (Hanan, 1986). Mullin (1997) argues that this style of marketing in B2B can increase the closeness between seller and buyer and is essential for success in selling. Although advantageous over a uniform view of buyers as a single market entity, it can require greater resource to achieve the desired sales outcome, and can also necessitate the seller focusing on the buyer instead of just the technology. Plank and Dempsey (1980) argue that companies using this style of personal selling, necessitates an in depth understanding of many aspects of the selling process such as a high level of product knowledge as well as customer needs.

There is the thought within the extant literature that effective sales companies, particularly within technology markets, match the needs of potential buyers and aid them in making decisions about purchasing (Szymanksi, 1988; Ulaga & Sharma, 2001). The literature also indicates that buying companies tend to favour sales companies who communicate information that matches the way that buyers make decisions (Lord, Ross & Lepper, 1979; Alba & Hutchinson, 1987). Where there is a match between companies, there is the potential to induce closeness, which can lead to long-term relationships, if so desired. This fits with sales strategies that are increasingly orientated towards meeting the needs of both selling and buying organisations (Ulaga & Sharma, 2001). Sharma (1997) details that at the lowest tier, for low volume generating and non-strategic buyers, selling can be more appropriate through the use of direct mail, internet and telemarketing. However, as the sales volumes increases, the use of a dedicated sales force can be more effective with potential buyers. As the perception of buyer importance increases, and the strategic importance to the selling organisation is recognised, global, national and key sales personnel are used to sell. However, there is still much to elucidate about the use of personal spoken communication between sellers and buyers to enable the buyer to make sense of

products (Kotler & Pfoertsch, 2006; Slater, 2014). Whatever the approach to selling adopted, an understanding of buyer-seller communication is crucial; and this will now be explored in more detail.

2.2.4. Communication in B2B Marketing

The importance of communication to personal selling and buying cannot be underestimated, and at the simplest level occurs between two or more individuals, such as a buyer and seller (Rogers & Kincaid, 1981; Rogers, 2003). Communication in marketing can be planned and direct, with sellers and buyers acting as communication channels between organisations to exchange information. Outside of direct marketing communication, are inadvertent forms of communication, and for example include SF books or advertising from a non-related product or the internet (Ekli & Sahin, 2010). While there are numerous types of communication in marketing practice, this study focuses on understanding how spoken communication can induce dyadic closeness (Simmel, 1897) between buyers and sellers to facilitate how sense is made of products.

Communication can be homophilous or heterophilous, with homophily being the degree to which individuals perceive similarity, whereas heterophily is based upon how different individuals are. Drawing on the summary of Monge and Contractor (2003), there are two lines of reasoning that support the theory of homophily, including Byrne's (1971) similarity-attraction hypothesis and Turner's (1987) theory of self-categorisation. The similarity-attraction hypothesis argues that interactions amongst people are more likely to occur between individuals who perceive they display similar traits. The theory of self-categorisation suggests that people tend to self-categorise in terms of race (Mollica et al, 2003), age (Feld, 1982), education (Marsden, 1987) and gender (Ibarra, 1992; Leenders, 1996) etc. with homophilous structures functioning to make communication more meaningful. Self-categorised identity can be considered critical, where cultural closeness is not only enacted but can be examined through discourse, and following the argument of Phillips and Hardy

(2002), organisational processes require an understanding of identity from a discursive perspective, to better capture the fluidity of social life.

Ibarra (1992) argues that as interpersonal similarity increases, so does the predictability of behaviour, which in turn reduces communication apprehension, resulting in further homophilous communications between individuals. A more simplified version of homophily is that 'similarity breeds connections' (McPherson et al, 2001: 415) and 'birds of a feather flock together' (McPherson et al, 2001: 417).

The use of the terms homophilous and heterophilous can be regarded as synonyms used by other social scientists for communication, which include: similarity and dissimilarity (Lott & Lott, 1965), co-linear and non-linear (Runkel, 1956), social closeness and social distance (Barnlund & Harland, 1963), and, similarity and complementarity (Jones & Daugherty, 1956). Rogers (2003) indicates that homophilous rather than heterophilous communication is more likely to produce successful technology adoption.

Although homophilous communication can aid in technology purchasing, it is more likely for communication to be heterophilous, which can create communication problems for selling products (Coleman et al, 1966; Van den Bulte & Lilien, 2001). This study aims to increase the level of knowledge about homophilous/heterophilous communication and how it influences buyer decision making for high technology and specifically nanotechnology products. In comparison to other lower technology or non-technology products, high technology is perceived as facing greater difficulties for sales personnel to communicate in heterophilous situations (Mohr et al, 2001). It is suggested by Mohr et al (2001) that this is symptomatic of the lack of understanding and difficulties in communicating between technical and marketing personnel (which may be an example of heterophilous communication). Importantly, Song and Parry (1997) and Gatignon et al (1997) indicate that where technical and marketing teams can become more integrated, and develop more of a common language, there is a potential for greater sales success (perhaps through the formation of homophilous communication). There can however be challenges

where individuals such as scientists exist in organisational roles, encountering and constructing both homophilous and heterophilous discourses, linked to speaking to scientists and non-scientists respectively (Zabusky & Barley, 1997). These concepts are extended in this study to explore this phenomenon in dyadic seller-buyer relationships.

Examining the value of explaining the underlying science of products for making sense of high technology products, Rogers (2003: 18) states:

> 'Diffusion investigations show that most individuals do not evaluate an innovation on the basis of scientific studies of its consequences, although such objective evaluations are not entirely irrelevant, especially to the very first individuals who adopt. Instead, most people depend mainly upon a subjective evaluation of an innovation that is conveyed to them from other individuals like themselves who have already adopted the innovation.'

Probert et al (2013) argue that it is not enough to assume a buyer has sufficient knowledge to grasp the potential of a technology, or product being communicated. There is thus the suggestion that sellers must utilise language that can be understood by buyers and other potential decision-makers within the purchasing organisation (Dean, 1987). In the next section research on linguistic 'toolkits', is examined as an aid for sellers and buyers to make sense of discourses used in sales.

2.2.5. Linguistic 'Toolkits'

For sellers and buyers, managing the information content of spoken communication for high technology products can be challenging. While there is the potential for sellers to influence buyers' decision-making to increase the opportunity for increased product sales, there is also the potential to confuse buyers, which may negatively impact sales (Probert et al, 2013). Questions sellers might ask themselves include, (1) what should I communicate about a

technology product? (2) What level of information about the technology should I communicate? (3) And which terminology should I use? For high technology products, these questions can be even more important than for lower or non-technology products as there can be various cultural references linked to technological words. Sellers and buyers may draw upon these words to make sense of high technology products, which may in turn influence purchasing decision-making. The examination of this aspect receives limited attention from B2B studies, thus suggesting a need for the current study to focus on how cultural resources and linguistic tools are used to communicate sense. Drawing on the B2C study by Davies (2011: 317) nanotechnology is presented as a 'postnormal technnoscience' in which 'cultural and linguistic resources' such as 'personal experience and expertise, analogies and comparisons, and fiction and popular culture' are drawn upon by individuals to 'weigh up and evaluate emerging technologies'. Davies (2011: 232) further highlights this, by his comment, that:

> '...on the one hand, that nanotechnology is fundamentally 'the same' (as previous technologies), and, on the other, that it is fact radically different from anything that has gone before. These themes are, of course, entirely in opposition to one another; they are also both frequent occurrences within focus group talk and are orchestrated by the toolkits of resources I have described'.

The disparity between high technology and nanotechnology constructions is based on what Davies (2011) suggests is the individual's 'experience, expectations and desires to create meaning' through the use of linguistic toolkits. These toolkits are an assortment of linguistic devices and part of the vehicle for actors to give and make sense of an increasingly complex and uncertain technological world to construct and position products (Sardar, 2010). High technology and nanotechnology products can thus be simplified or reconstructed to highlight different aspects of a product, particularly as a method of creating shared sense and meaning between individuals with different cultural knowledge. Examples of linguistic toolkits have been shown to include personal knowledge and experience, analogies and comparisons, fiction and popular culture (Davies,

2011). Within the seller-buyer relationship and different types of communication, is the potential of discursively simplifying or reconstructing products to enable sense to be made through the use of linguistic toolkits. Even though organisational actors exist within numerous social groups, and are exposed to varying discourses, an actor will relate current events to lived experience, including work, family life, academic expertise etc., which forms a local knowledge of the self and experience (Wynne, 2001). This knowledge 'will be a key reference point in dealing with future technologies' (Davies: 2011: 323) as a way to construct sense for high technology products. As an example if a product is framed as a predominantly medical technology, individuals with experience of medical technologies are more likely to relate the newly encountered technology to their prior experiences of other medical technologies. This can potentially create challenges for marketing of technology products due to the unknown nature of individual experiences. An advantage of personal selling is that it creates an opportunity to explore individual backgrounds and individually held high technology frames, which can be reconstructed to facilitate the seller-buyer relationship.

Popular culture, which encompasses aspects such as SF, has long been used in high technology sectors, particularly for creating conceptual 'products of tomorrow' in R&D (Schwarz, 2011; Johnson, 2011). How managers draw on SF discourses to make sense of high technology products has however received relatively limited attention with an examination into manager discourses being through the studies of Jermier (1985), Taylor (2000) and Hansen et al (2006). Extant studies have shown that SF can function as a cultural 'anchor' to provide a discursive shortcut for what a product is or how it works (Marcu et al, 2014), but in heterophilous communication can result in misunderstanding (Coleman & Ritchie, 2011; Dragojlovic & Einsiedel, 2013). There is however much still to unpick for how such cultural references can be used via linguistic constructions to give and make sense of high technology.

Looking at an example of using SF as a linguistic tool, Chang (2014: 270) provides a negative stereotypical of nanotechnology, by saying '…in the world of Neal Stephenson's SF novel the Diamond Age, poor people may be forced to

cope with flimsy synthetic substitutes made with nanotechnology, rather than the real natural materials'. While high technology products have been the focus of numerous popular culture examinations, it is not known how different social groups and individuals within these groups make sense of these aspects. The study by Davies (2011: 323) argues that laypersons 'use these stories and images as the basis for imaginative exploration of the dilemmas that new technologies may present'. Berne (2008) suggests that cultural aspects such as SF have enabled a wider examination of technologies and technology products, using a more varied consideration in the literature by individuals and social groups.

While these discursive toolkits are briefly explored for high technology/nanotechnology as a general concept in B2C markets (Gaskell, 2005: Davies, 2011), consideration of products in B2B seller-buyer relationships is limited. Heterophilous (culturally dissimilar) and homophilous (culturally similar) spoken communication is linked to inducing dyadic closeness between sellers and buyers (Loeve, Vincent & Gazeau, 2013) but before this study was carried out, it was not known what role if any linguistic toolkits would play. In the next section, seller-buyer relationships are examined in more detail, as the environment for marketing communication is used to produce a theoretical foundation to explore how dyadic closeness in seller-buyer relations can be induced through language to aid in buyers making sense of opaque and complex products.

2.2.6. Seller-Buyer Relationships

The seller-buyer relationship is arguably at the centre of inter-company relations, and at the simplest level exists between two individuals, such as a buyer and a seller. For this relationship, the choice of selling and buying partners is often more restricted in high technology B2B markets, with a lower potential number of buyers and sellers in comparison to B2C markets or even more standard B2B markets (Ford, 2002). This can create greater pressures for maintaining and managing seller-buyer relationships as arguably with relationships being in shorter supply, they may be perceived as more important (Håkansson & Wootz,

1979; Cunningham, 1986). Over the past few decades there has been a growing recognition that seller-buyer relationships are inherently complex. Although insightful prior studies have examined buying behaviour and marketing activities (Ford, 2002), there is still much to elucidate within the buyer-seller relationship about how language is used, and linked to social and cultural structures to facilitate sales.

Importantly, B2B relationships can involve multiple buying and selling opportunities towards the goal of sales, where Ford (2002: 4) argues that:

> 'The relationship between companies and these important customers and suppliers tend to be close, complex and long term, with extensive contact patterns between many individuals from each company and significant mutual adaption by both parties'.

Ford (1982: 6) also notes that:

> 'Relationships evolve over time and can be considered to traverse a series of stages characterised by increasing mutual adaption, reduced "distance" and increasing commitment'.

Where seller-buyer relationships continue over time, they can become evolutionary (Ford, 1980), in terms of (1) increasing experience of both partners, (2) reducing relationship uncertainty, (3) growing perceived and actual commitment, and (4) the adaption by both parties of the methods of selling and buying by respective parties.

Importantly, for dyadic seller-buyer relationships there is the potential for both seller and buyer organisations to actively manage various aspects of the relationship. Managing this relationship involves a commitment of resource in relationship development (Johanson & Mattson, 1992). Hagg & Johanson (1982) identify that sensegiving can be regarded as a commitment of resource. Management based investments made by one party in a dyadic seller-buyer relationship are shown to have an important influence on that party's current or

future transactions with the other party (Williamson, 1981). Marketing management of the seller-buyer relationship is therefore an important aspect of reducing costs and increasing return on investment, as seller-buyer relationships evolve (Turnbull & Wilson, 1989). To aid in management of these relationships Shapiro et al (1987) argue for segmenting buyer types, while Krapfel et al (1991) suggest the importance of matching individuals in relationships, to create dyadic closeness. The next section thus examines dyadic closeness in sales relationships.

2.2.6.1. Dyadic Closeness

Dyadic closeness can occur between a seller and buyer as a consequence of their interactions but also through wider organisational influences. The ability to invest resource to induce dyadic seller-buyer relationships can be limited by the number of relationships and their worth, particularly for what level of investment is required and appropriate, and whether inducing dyadic closeness is considered worthwhile. For example, Ford (2002) proposes that selling orientated companies with a large number of buyers will not invest to achieve high levels of dyadic closeness between sellers and buyers, as it is not financially feasible. This can be contrasted against selling companies with a small number of buyers (which are often within high technology sectors), where investments to induce dyadic closeness are more financially feasible and can produce a higher return on investments made. Importantly and linked with this is the potential for buyers and sellers to make choices about how to carry out marketing communications to establish more fruitful relationships, where dyadic closeness between sellers and buyers is increased. These communications can be vital for whether one individual considers another an insider (part of the group) or outsider (not part of the group), where to be an insider might indicate desirable traits and knowledge, with the opposite being the case for outsiders (Merton, 1972). While this area has been widely examined throughout numerous aspects of social life (Nero, 2015), there is still much to unpick, particularly for how this aspect is approached in high technology sales relationships.

Wilson and Mummaleneni (1986) argue that investments of resource can be made to develop relationships based on a need for bonding between sellers and buyers to develop mutual commitment as well as return to each party. To explore this aspect, it is necessary to examine to what extent the buyer is perceived as passive in the seller-buyer relationship, particularly for receiving communication. Ford (2002: 20) states there is a view that:

> 'Buyers are passive and only react to the stimuli of the seller by buying or not buying. The selling firm is the active partner in the seller-buyer relationship. Further this relationship is largely seen to be between the seller and some generic "market", rather than with individual customers'.

This is not a dissimilar view to that discussed in the section 'Personal Selling' where communication is geared from the seller to the buyer as one-way, and the interaction of the buyer is limited to buying or not buying. In many ways this is a limited view and in this study, 'the interaction approach' (Håkansson, 1982) to selling and buying is favoured, as it is based on both the buyer and seller being active participants within the process, both actively engaging with making sense of what is being bought and sold. Importantly though and as Ford (2002: 22) suggests, both buyer and seller may engage in trying to 'manipulate or attempt to control the transaction process' through spoken communication. The interaction approach is often utilised for examining complex, dyadic and close relationships (Håkansson, 1982), all of which are potentially compatible with this study. Briefly, this approach consists of (1) the interaction process, (2) the two participants, (3) the environment, where the participants are based, and (4) the atmosphere affecting and affected by the interaction. Other factors also of importance are the communication of information between individuals, financial exchange and social exchange, but in this study, while levels 3 and 4 are acknowledged where relevant, it is only the interaction process and two participants that are given close attention. As previously mentioned, these factors may result in opportunities to increase dyadic closeness between individuals within seller-buyer relationships, and to facilitate selling opportunities, through spoken marketing communication, with a potential to influencing purchasing

decision-making. The next section therefore considers the theory of purchasing decision-making.

2.2.7. Purchasing Decision-Making

B2B purchasing decision-making involving high technology products often results in complex and opaque discourses between dyadic relationships involving a seller and buyer (Ford, 2002). These factors are known to complicate the ability of sellers and buyers to make decisions about products (Johanson & Vahlne, 1977; Håkansson, 1982). In this study, decision-making is regarded as a process requiring deliberation before making choices, 'as opposed to just random picking, habitual buying or just using the likeability heuristic' (O'Shaughnessy, 2005). Kotler (2000: 88) suggests that buyers make decisions via the following processes:

> 'Both marketing and environmental stimuli enter the buyer's consciousness. In turn, the buyer's characteristics and decision process lead to certain purchase decisions. The marketer's task is to understand what happens in the buyer's consciousness between the arrival of outside stimuli and the buyer's purchase decisions.'

With this approach, it is the point where stimuli enters the buyer's consciousness that the buyer must make sense of the stimuli (in this study spoken communication), leading to acceptance or rejection of a purchasing decision. While the marketing management view is useful, particularly for its simple representation of a complex phenomenon, it can over simplify these processes.

The process of decision-making is studied via different perspectives for whether it is rational, and carried out on an individual or group activity basis (Kahneman & Tversky, 2000). Briefly it occurs when a choice is made from alternatives, with every decision ultimately producing a final choice (Reason, 1990). Decision-making can be regarded as a problem solving activity via reasoning or emotional processes, which can be rational/irrational and reaches completion

when a satisfactory solution is attained. Kenji and Shadlen (2012) argue it as an involuntary process, where individuals seek to maximise benefits and minimise costs via analysis of available data (Schacter, Gilbert & Wegner, 2011). This is referred to as 'Rational Choice Theory' (RCT), which assumes that actors maximise benefits and minimise costs (Schacter, Gilbert & Wegner, 2011). According to Hollis (1987, 1996) standard economic theory constructs individuals as rational maximisers of 'utility' who select the most efficient means of achieving goals, based on self-interest. Although RCT is extensively used in a variety of academic disciplines (Ryan, 2003) there are limitations of this theory, as Baron (1998) extensively details. Perhaps the crux of the challenge to RCT is the assumption that self-interest is pursued at the exclusion of all other factors (Sen, 1987). As Kahneman, Knetsch and Thaler (1990) point out, classical microeconomics assigns no role for other factors such as generosity, social conscience, goodwill and fairness, but research suggests that people act out of these interests and against self-interest at times, and also finds agreement with O'Shaughnessy (2005).

Apparently 'irrational' behaviour on the part of the purchaser may also be linked to factors such as availability bias or availability heuristic (Schacter, Gilbert & Wegner, 2011). This is a shortcut for judgment making about the probability of an event occurring, based on how easily information can be recalled. In such cases, the individual perceives recalled information as important, with a positive relationship having been demonstrated between recalled information and the consequences of something occurring based on recalled information (Tversky & Kahneman, 1973). For example, this can result in a purchasing decision being influenced by an individual having watched a film that depicts the technology in a particular way, which is a non-intentional communication. Alternatively, a seller utilising a SF linguistic vehicle may construct the buyers' sense towards a favourable or unfavourable view of a high technology product.

For individuals with a lower knowledge of high technology, there is a greater potential for 'information overload', which occurs where there is a high volume of cost/benefit information resulting in processing problems, which impact on decision-making (Kutty & Himanshu, 2007). The problem can at this point

become how to make a decision, when all criteria are being considered simultaneously, and whether to prioritise or purchase a separate technology altogether. It is thus important to understand how sense is given via marketing communication to construct buyer and seller views of products.

The issues explored in this section suggest that high technology marketing and decision-making is not only complex but also potentially takes place within an opaque environment that is capable of triggering a need for individuals to try to make sense of their environment as well as products, and is not as simple as marketing management theory propagated by authors like Kotler (1967) has suggested. Stepping beyond the traditional approaches to management, this study is embedded within a constructionist approach, where as Weick argues managerial action is not based on how the world 'is', but rather how it is perceived (Weick, 1995). Within more traditional views of marketing, there is a risk that management is viewed as capable of producing 'how to' guides (Faria & Wensley, 2002), at the expense of better understanding the complexity of organisational life. This in turn may prevent managers and other organisational actors from adequately engaging with the complexity of their lived experiences, and strategically addressing them. Building a foundation to address such aspects, the next section examines communicating sense through marketing, where the paradoxical nature of organisational life can be addressed through sensemaking, and managers can seek to cope with, rather than manage communicated sense (Håkansson & Snehota; Ellis & Hopkinson, 2010).

2.2.8. Communicating Sense through marketing

Since the 1980s, management scholars have become increasingly interested in how language is used to convey sense and meaning in organisational and marketing related environments and activities (Daft & Weick, 1984; Smircich & Stubbart, 1985). A driving force for understanding these aspects is the potential for organisations and individuals to learn about the markets they operate within through 'retrospective processing' (Johnson, Sochi & Grewal, 2004) to gain a greater understanding of their competitors (Sinkula, Baker & Noorewier, 1997).

Day (2002: 241) argues that by trying to make sense of their relationships, individuals and organisations can potentially 'anticipate emerging opportunities and competitive threats, and more accurately forecast how the market will respond to changes in strategy'. Olson, Cravens and Slater (2001) suggest that organisations engaging in these processes have a potential to increase operational excellence through continued learning. Importantly, understanding the sense that individuals and organisations make from marketing communications can be utilised to understand seller-buyer performance, as well as acquiring new buyers and increasing buyer satisfaction (Neil et al, 2007; Krush et al, 2013). Dick and Basu (1994) pointed out that as organisations increase their understanding of the way their buyers make sense of their products, they become more able to offer more relevant products and services that increase customer satisfaction. Finally, the ability of a company to make sense of its customers and communicate sense of technologically complex products can produce more effective marketing strategies, increase closeness between sellers and buyers, and decrease marketing management costs (Webster, 1988).

Marketing communications delivered through personal selling can be used in a variety of ways for constructing the sense that buyers make of products (Krush et al, 2013). This is due to the unique position of sellers between the sales company and buyers, allowing them to potentially attain a high-level of information about their buyers due to their buyer-facing activities (Agnihotri, Rapp & Trainor, 2008). This is reiterated by Krush et al (2013: 826) who comment that sales staff 'operate at the border of the organization (i.e., at the interface with the customer)'. This position can provide strategically valuable market insights (Pass, Evans & Schlacter, 2004), with Maltz and Kohli (1996) believing that the position is 'ideal' for gathering market information. Day (2002) argues that it is for reasons such as these that organisations must listen to 'frontline' employees for sense-based communication processes to have value for the organisation and succeed. The information acquired by such employees has the potential to be used as an input into marketing communications processes to adjust them as perceived necessary (Krush et al, 2013).

Kennedy (2008) shows that high technology products entering emerging markets (where a product is considered an innovation) can be influenced by individuals and organisations using marketing to communicate sense including press releases and news stories, particularly for companies that are 'not-yet-legitimate' in the marketplace. Specifically, such communication helps potential buyers make sense of new products. A study by Santos and Eisenhardt (2009) suggests that entrepreneurs use discursive devices such as storytelling to give sense to construct new markets and claim a prominent place. Navis and Glynn (2011) show that the legitimisation of new product categories occurs through the process of nascent individuals and organisations engaging in processes that enable them to give and make sense for purchasing decisions. A more in depth examination of the use of language for making sense of high technology products is returned to and explored further throughout this study.

There are various benefits cited for high technology companies throughout this section to communicate sense via spoken communication in seller-buyer relationships and facilitate decision-making. The need to better understand how to carry out sensegiving in close relationships has been discussed over the past decades, particularly where personal selling is used to persuasively argue a point of view about a process, action or legitimise discourse, as part of selling (Nugus et al, 2009; Hilligoss, 2014). This is unfortunate as aspects such as this has led to an increased perception that marketing is a costly affair rather than a cost efficient process, meaning it is potentially losing its influence within high technology sales companies (Nath & Mahajan, 2008). There are calls from marketing scholars for further research into how sense is communicated and made via marketing communication and the relationship of marketing communication, sense and purchasing decision-making (Rapp et al, 2010; Wei & Wang, 2011). The next section on sensemaking produces an in depth examination of the role of sense, how it is given and made, and the underpinning aspects relevant to this study. The next section draws together many aspects already discussed to show how communicating sense can be pivotal in high technology marketing. This can be coupled with the observation that high technology companies predominantly utilise the concept of technology push,

which excludes much marketing theory and practice, and can result in low levels of product purchasing and adoption.

2.3. Sensemaking

The ways that individuals make sense of communication is of pivotal importance in B2B high technology organisations (Weick, 1995). Understanding how organisational actors use communication in these arenas has drawn considerable attention through the discipline of sensemaking (Busemeyer, Hastie & Medin, 1995; French & Funke, 1995). All opaque technology types have a potential to trigger and facilitate the need for individuals to make sense of products through the process of sensemaking. In turn, this can lead to a perception of a more ordered, simple or preferred reality being constructed for the individual engaging in the sensemaking process (Weick, 1995; Monin et al, 2013). There has been a propensity in prior studies to pay greater attention to spoken communication in relation to sensemaking for lower technology products (Prasad, 1993; Schön & Rein, 1994), in comparison to high technology products.

The language associated with high technology products and operating environments is often heavily laden with technical terms. This can result in confusion between sellers and buyers about the nature of products, and confuse buyer decision-making. Bordas (2015) argues that a greater focus should therefore be paid towards this use of technical terminology in sales environments. Against this backdrop, Mohr and Shooshtari (2003) suggest that marketing practices need to be continually adapted and modified to facilitate communication of sense between sellers and buyers. These aspects have led to recommendations being made that high-technology companies require a greater level of attention for product marketing than their lower technology counterparts, and in particular for the language used to communicate sense about such products (Haverila, 2013). This necessitates a deeper understanding of sensemaking processes and how they can be applied to this area. As a starting point to understanding sensemaking, the history of sensemaking is briefly

examined in the following section to contextualise sensemaking in light of this study.

2.3.1. The History of Sensemaking

Sensemaking can be traced back over a hundred years in the academic literature, to the first publications by James (1890) and Dewey (1920). Although sensemaking had been discussed in the literature, it was not until the late 1960s that it started to emerge as a distinct topic, particularly for being studied in an organisational context (Garfinkel, 1967; Weick, 1969). 'Sensemaking language was introduced into the literature by scholars who study how meaning is constructed and transmitted' (Maitlis & Christianson, 2014: 6). Different approaches to sense-orientated language are used based on the particular academic studying sense, the numbers of which have grown in recent years. Garfinkel (1967) uses the term 'sense making' as a way to examine everyday practices of individuals and how they interact, interpret and account for the way they experience their reality. Polanyi (1967) expands sense terms to produce 'sense-giving' and 'sense-reading' to describe how meaning is communicated and understood respectively between individuals. It wasn't however until Weick (1969) wrote The Social Psychology of Organizing that sensemaking as a term was used in an organizational context. The following decades after Weick's (1969) work led to the production of a larger body of academic work examining subjective individual realities, challenging the concept of a singular and definitive objective reality in sensemaking research. This work finds various synergies with and emphasises the social aspects of the construction of reality (Berger & Luckmann, 1966).

In the 1980s, sensemaking researchers undertook to elucidate the cognitive aspects of sensemaking (Walsh, 1995). This involved trying to understand how sensemaking can be spurred by violated expectations (Louis, 1980) as well as how stimuli from the environment are noticed, interpreted and incorporated (Kiesler and Sproull, 1982) and why some received information is given more attention than others (Daft and Weick, 1984; Starbuck and Milliken, 1988).

In the 1990s and related to Weick's (1995) book on Sensemaking in Organizations, a framework emerged for understanding sensemaking. A deeper look into sensemaking for complex scenarios was highlighted, including sensemaking during (Weick, 1990, 1993) and after a crisis (Gephart, Steier & Lawrence, 1990; Gephart, 1993). This led to further considerations of wider views, including the relationship of language and sensemaking (Boyce, 1995; Hill & Levenhagen, 1995), as well emphasising understanding organisational outcomes such as culture (Drazin et al, 1999), social influence (Ibarra & Andrews, 1993) and strategic change (Gioia & Chittipeddi, 1991; Barr, 1998).

From the year 2000 onwards, there is an increased focus on the social processes through which sensemaking occurs (Maitlis, 2005) and studies include a greater emphasis on areas such as the relationship between sensemaking and language (Cornelissen, 2012), narrative (Sonenshein, 2010), and other discursive practices (Rouleau & Balogun, 2011). These areas are important to this study, with academic attention being required for how individuals in B2B organisations utilise linguistic vehicles including toolkits as well as cultural resources such as SF to give and make sense. As Hopkinson (2001) argues, when two individuals are involved in sensemaking, both act to give and make sense of each other's communication. In this study it is both seller and buyer sensegiving and sensemaking to each other via spoken communication that is of interest for how high technology products are constructed and purchasing decisions made.

To further understand sensemaking, a more in depth examination of how sensemaking is defined and constructed is considered in the following sections.

2.3.2. Constructing and Defining Sensemaking

Sensemaking descriptions are often in a state of flux, including sensemaking as a 'process' (Weick, 1995), a 'recurring cycle' (Louis, 1980), or even something that 'unfolds as a sequence' (Weick, Sutcliffe & Obstfeld, 2005). Sensemaking can also be described as 'sensemaking theory' (Holt & Cornelissen, 2013), a 'sensemaking perspective' (Schultz & Hernes, 2013), a 'sensemaking lens'

(Vough, 2012) and Weick's 'sensemaking framework' (Mikkelsen, 2013), commonly referred to as the 'seven properties of sensemaking' with my synthesis of Weick's sensemaking framework being shown in Table 2.1.

Seven Sensemaking Properties
1. Identity: who individuals perceive themselves to be, influences how they interact and interpret events (Weick, Sutcliffe & Obstfeld, 2005).
2. Retrospection: provides the opportunity for sensemaking to occur. The point in time that retrospection occurs affects what people notice (Dunford & Jones, 2000), with event attention/interruption being relevant (Gephart, 1993).
3. Enactment: individuals enact their environment via dialogues and narratives (Bruner, 1991; Watson, 1998; Currie & Brown, 2003). Through these acts, individuals can understand what they think, organise experiences, increase control, prediction of events (Isabella, 1990; Weick, 1995; Abolafia, 2010) and reduce complexity in management change (Kumar & Singhal, 2012).
4. Sensemaking is a social activity: where stories are persevered, retained or shared (Isabella, 1990; Maitlis, 2005). The process of sensemaking for the individual is social and includes the individual as well as the organisation (Watson, 1995) and as Currie and Brown (2003: 565) stated, the narratives are 'both individual and shared...an evolving product of conversations with ourselves and with others.'
5. Sensemaking is ongoing: individuals continually react and shape their environment. Thurlow and Mills (2009) suggested a feedback process where individuals project themselves in an environment, observe consequences, and learn about their identities and world, using feedback to deduce their identity from the behaviour of others towards them. Weick (1993: 635) argued: 'the basic idea of sensemaking is that reality is an ongoing accomplishment that emerges from efforts to create order and make retrospective sense of what occurs.'
6. Extracting cues: the process for determining relevant information and acceptable explanations (Brown, Stacey & Nandhakumar, 2007). The extraction of cues can provide reference points linking ideas to broader networks of meaning, which as Weick (1995: 50) stated are: 'simple, familiar structures that are seeds from which people develop a larger sense of what may be occurring.'
7. Favouring plausibility over accuracy: for events and contexts (Currie and Brown, 2003; Brown, 2005; Abolafia, 2010). Weick (1995: 61) stated that: 'in an equivocal, postmodern world, infused with the politics of interpretation and conflicting interests and inhabited by people with multiple shifting identities, an obsession with accuracy seems fruitless, and not of much practical help, either.'

Table 2.1. The seven properties of sensemaking.

The depiction in table 2.1 highlights many of the important aspects of sensemaking and creates what can be considered a 'rough guide' to sensemaking. The aspects in this table are all explored in greater depth throughout this study but are introduced here. Briefly, the seven points draw out what are perceived as critical elements of the sensemaking process including the social environment and where collective past and perceptions of the future interact retrospectively with current and past events to make sense. Importantly, the process of sensemaking does not require sense made to be accurate. Instead, sense made can be seen as more of an answer to a question, that an individual perceives as adequate to a sensemaking cue (Maitlis, 2005). Moreover, sense made is relative to the individual making it, meaning it is important that sense made is contextualised against the backdrop of the individual (Weick, 1995).

According to Maitlis and Christianson (2014: 8): 'there is no single theory of sensemaking', which makes it troublesome for producing a single-definition, but a few definitions are provided in this section for demonstrative purposes. Examples of sensemaking definitions include sensemaking as creating 'rational accounts of the world that enable action' Maitlis (2005: 21), and as 'a continuous effort to understand connections (which can be among people, places, and events) in order to anticipate their trajectories and act effectively' (Klein et al, 2006: 71). Or as Maitlis and Christianson (2014: 11) state, it is a:

> 'process prompted by violated expectations, that involves attending to and bracketing cues in the environment, creating intersubjective meaning through cycles of interpretation and action, and thereby enacting a more ordered environment from which further cues can be drawn'.

Examining these definitions, there is an ontological difference based on whether sensemaking is perceived to occur within an individual or between individuals. Within this study, a social constructionism stance is taken, where the ontology of sensemaking approaches sensemaking as occurring between individuals. Gephart (1993: 1470) states that: 'sensemaking occurs and can be studied in the discourses of social members – the intersubjective social world – rather than

simply occurring in their minds'. In social constructionism studies, importance is placed on 'conversational and social practices (methods) through which the members of a society socially construct a sense of shared meanings'. Thus, social constructionism places sensemaking in language used (spoken and written), and makes it potentially possible to construct intersubjective meaning between individuals, with language as the vehicle. As Maitlis and Christianson (2014) argue, sensemaking is located within the language of organisational actors. Using discursive processes allows the study of sensemaking from individuals via accounts, narratives or stories (Maitlis, 2005; Martens, Jennings and Jennings, 2007). This approach is used in this study to explore how multiple sellers and buyers construct the sensemaking process for high technology selling and buying.

Due to the pivotal nature of the construction of sense through discourse, the next section explores discourse and sensemaking.

2.3.3. Discourse and Sensemaking

There are numerous ways in which discourse is conceived, and within this study it is regarded as communication through spoken language (although other formats are acknowledged), to give and make sense for meaning to be shared between individuals. It can be used to build and support the communication of themes, stories and narratives to give and make sense.

Ellis and Hopkinson (2010: 414) summarise that: 'knowledge is subjectively constructed through sense-making processes and knowledge, rather than reality, is the important concept to researchers seeking to understand managerial actions.' Discourse is a vehicle for not only making sense but also as a proxy to draw out and elucidate sensemaking processes, which are predominantly subjective experiences for the individuals engaged with sensemaking (Zilber, 2007; Schultz & Weheimer, 2010). Beyond being a vehicle to study sensemaking, discourse is able to act as a cue to trigger sensemaking, as well as for individuals and organisations to make sense of the cue. For instance, and relevant to this study, spoken communication from a seller to a buyer is regarded as pivotal for the

ability of a buyer to make sense of the communication (Weick, 1995; Clark, Abela & Ambler, 2006; Pauwels et al, 2009). Taylor and Van Every (2000: 40) supports this view by stating: 'sensemaking involves turning circumstances into a situation that is comprehended explicitly in words and that serves as a springboard for action'. Huber and Daft (1987: 151) argue that: 'when confronted with an equivocal [uncertain or confusing] event, managers use language to share perceptions among themselves and gradually define or create meaning through discussion'.

Currie and Brown (2003: 566) argue that organisations are 'polyphonic, socially constructed verbal systems characterized by multiple, simultaneous and sequential narratives that variously interweave, harmonize and clash'. Sensemaking is thus a vehicle for individuals to select or reject narratives/stories, and form dominant narratives/stories. As Patriotta (2003) suggests, these discursive tactics can support different claims within an organisation, and where these claims become shared, they are often temporary and fragile. An example is the claim that could be made that nanotechnology is 'inspired by nature' which negates the technological aspects of such products (Sun et al, 2011).

Beyond narrative and storytelling, the use of metaphor also receives attention in organisational sensemaking (Cornelissen, 2005; Nicholson & Anderson 2005; Cornelissen et al, 2005). An example of a nanotechnology metaphor is the construction of a drug delivery system being stated as a 'therapeutic missile' (Loeve, Vincent & Gazeau, 2013). Cornelissen (2005, 2010, 2012) suggests that metaphors can simplify complex situations and aid in providing order and justification for certain actions in unfamiliar situations. Maitlis and Christianson (2014: 33) state that: 'metaphors play a valuable role in validating some accounts and discrediting others'. Metaphors are linked to the way that individuals perceive themselves, as well as the way that others perceive them. In organisations, this type of perception is associated with individuals' role commitments, and for instance whether an individual has high or low expectations of their commitments (Cornelissen, 2005, 2010, 2012). Maitlis and Christianson (2014: 34) suggest that, 'this work reveals how sensemakers' use of

discursive devices such as metaphor shifts significantly depending on their relationship to the issue in question and their audience'.

In trying to understand the sensemaking process, Maitlis and Christianson (2014: 13) argue that the process of sensemaking can be addressed through the questions including: 'how do events become triggers for sensemaking?' and' how is intersubjective meaning constructed?' These issues are discussed in the following sections alongside other perceived areas of importance.

2.3.3.1. Events Triggering Sensemaking

The process of sensemaking is initiated by cues, which can disrupt a person's 'normal' perception of their world, creating ambiguity and uncertainty for how they should act. Maitlis (2005: 21) argues that cues trigger sensemaking when individuals 'confront events, issues, and actions that are somehow surprising or confusing' and when '[d]iscrepant events, or surprises, trigger a need for explanation' (Louis, 1980: 241). Cues therefore create an inconsistency between the way an individual expects reality to occur and what actually happens, which are both subjectively viewed and constructed. An example of a cue triggering sensemaking is a seller communicating (sensegiving) different toxicological aspects of a product than what the buyer might have expected, thus the buyer engages in sensemaking. It is important to question how severe a cue has to be to trigger sensemaking? It is suggested that the severity can vary between individuals, and with severity being relative to the individual experiencing the cue (Weick & Sutcliffe, 2007). Weick and Sutcliffe (2007: 311) argue that at the 'bottom' of the 'scale' is the feeling 'that something is not quite right, but you can't put your finger on it'. Whereas at the more extreme end of the scale are 'cosmology episodes' which occur 'when people suddenly and deeply feel that the universe is no longer a rational, orderly system' (Weick, 1993: 633). Maitlis and Christianson (2014: 14) suggest that: 'discrepant cues significantly disrupt identity or goals, however, they may still not trigger sensemaking if group norms or the organizational culture mitigate against it'. This often occurs due to individuals allowing for an unexpected event, dismissing it or toning down its

importance (Weick, 1998; Dunbar & Garud, 2009). Similarly, Krems (1995) argues that adaptability in information processing can reduce sensemaking being triggered.

Novel and disruptive products can provide new opportunities for sense to be made, where traditionally held views are challenged, particularly those surrounding identity, necessitating these aspects to be renegotiated, potentially through sensemaking. Identity is a key part of how organisational actors make sense of their world, including products, and how relationships are constructed, often through what is said (Weick, 1995). What sense is made can be linked to how individuals consider themselves, as well as others through their perceived and constructed identities, with high technology products potentially providing sensemaking triggers, where there is poor understanding of what is said. Given their pivotal importance to sensemaking on an individual and shared basis, the concepts of self and role identity are considered in the following section.

2.4. Identity

As Lawler (2013) argues, identity it is a difficult and somewhat slippery concept to define. Identity can be viewed as a negotiated composite of the social and cultural space we occupy, itself is in a state of flux, influenced by the people and situations we engage with. This is coupled with how we internally make sense and negotiate who we consider ourselves to be, in comparison to who we could be, and how we perceive others, as well as how we perceive they see us (Lawler, 2013). Having an identity makes us potentially the same as others with the same identity, while at the same time making us different (Pullen, Beech & Sims, 2007).

'Thrusting' an identity on someone is too simple a way of viewing identity, lacking nuance for how individuals construct their identities, and who they consider themselves to be, which is often through contested negotiation. Individuals often have several identities and complicating our understanding, is the possibility that the construction and enactment of any one identity is not in

isolation from other identities, encountered or imagined; where who we are is linked to who we think others are (Jenkins, 2004). Studies such as this, interrogating how relationship closeness can be influenced by identities aids our understanding of how individuals make sense of themselves in context to others (Ybema et al, 2009), particularly in terms of how social actors discursively position themselves in marketing/purchasing relationships (Ellis & Ybema, 2010).

In sales encounters, identity can be a critical part of discursive sensemaking (Weick, 1995). Here individuals engaged in selling and buying must utilise their identities, enacted through the sales relationship to facilitate understanding and sensemaking. Briefly, sensemaking can be orientated towards understanding organisations, where how people understand the world is a key factor, and sense given and made flows as subjective knowledge through discourse (Ellis & Hopkinson, 2010), where sense is given by one person and made by another (Gioia & Chittipeddi, 1991). Discursively sharing knowledge can be part of legitimizing a community, and constructing boundaries to incorporate group members and exclude others. As Ellis and Hopkinson (2010: 414) argued 'thus the production and display of particular forms of knowledge is at once a sense-making act and an act through which identity is claimed'.

2.4.1. Self and Role Identity

Arguments are made that individuals may hold several identities at the same time, albeit often favouring and promoting one identity linked to their organisational role, for example when they take place in work-based activities (Settles, Jellison & Pratt-Hyatt, 2009) using an identity as a buyer or seller. While different identities can be beneficial to making sense of organisational life, challenges can exist for which identity to enact, and where conflicts can occur between potential enacted identities (Van Sell, Brief & Schuler, 1981). Conflict between social roles or social identities is shown to result in negative psychological and performance outcomes for the individuals experiencing this aspect (Settles et al, 2002). For example, they may include a negative impact on an individual's

perceived quality of work life, through the enactment of an identity to a perceived/constructed organisational role (Higgins, Duxbury & Irving, 1992), amongst others.

In organisational roles, there can often be a requirement to undertake several tasks, which has the potential to raise the challenge of which identity to enact? While for ease and brevity, scholars may view identities as dichotomous such as 'this or that'; but it is likely that there are similarities between different identities being displayed and/or positioned. Looking in more detail at conflicts between role identities, there is often a dominant identity or identities, known as identity centrality (Settles, Jellison & Pratt-Hyatt, 2009). For example, for an individual who predominantly self identifies as a scientist, this title or role can be an important part of an individual's self-construction (Sellers et al, 1997). Of growing interest is how the 'priest-like' positioning of scientists can be used to legitimise what scientists say, delegitimising others who are non-scientists (Forshaw, 2012).

Discrimination against different social groups and perceived identities has been shown to increase identity centrality to a preferred or more accepted group (Bourguignon et al, 2006). As an example, an individual may engage in social group discrimination through the enactment of his or her own identity mirroring that of a preferred social group. Adopting a particular role identity is argued as a mechanism for individuals to increase their psychological protection against feelings of being devalued (Cross et al, 1988; Martire et al, 2000). Importantly for this study, which is concerned with the examination of discourse to understand seller and buyer interactions through talk, group identification and identity centrality is linked to facilitating information sharing through discourse between individuals both undergoing similar organisational conditions and with the same identity (Frable et al, 1988; Sellers et al, 2003). The act of group identification to a perceived highly valued group is constructed as being able to buffer individuals in turbulent organisations (Platow, Byrne & Ryan, 2005). This can be linked to how organisational actors make sense of their lives, and for how self-identities are constructed to make sense (as is discussed in Section 2.2.4). Of importance to this study is the potential way that respondents may use identity

centralisation, to construct and promote favourable identities for themselves, and their organisations, which can both feed into each other to increase the perceived status of the individual and organisation (Amiot, Terry & Callan, 2007). As Harris (1997) argues, identity is often constructed through discursive suasion, both dis- and per- to achieve organisational and individual goals.

For individuals who have imbibed and are actively promoting a role identity, as for example a seller, making a move into being a buyer (as can happen in SMEs where the same individual may be asked to perform both tasks) may create challenges for the construction of a new role identity (Jain, George & Maltarich, 2009). As might be expected, this move can require the modification of role identity, resulting in the question of which identity to enact? Upon taking up a new organisational role, role identity will not always change as with the 'flicking of a switch', although Ebaugh (1988) and Hoang & Gimeno (2005) have argued this. Instead a new role identity will have to be constructed, according to a self-view, and the view of others, based on sense made of perceived requirements of this new role identity (Burke & Tully, 1977), building on identities potentially already being used (Jain, George & Maltarich, 2009). The modification of role identity and self-view can result in altering the organisational activities that an individual engages with as well as the discourse used to engage in organisational life.

Looking further at role identity, organisational roles are defined as social positions with attached expectations for behaviour and obligations to other actors (Merton, 1957), which may in turn, influence discourse. Role identity however can be considered as helping individuals orientate towards their context, facilitating the relation of meaning to experience, and constructing guidelines for action (Gecas, 1982). Importantly role identity is argued as highlighting the close link between how a role may be socially constructed as well as how an individual within a role interprets their role (McCall & Simmons, 1978). As Ibarra (1999) discusses, roles guide action at a macro level, but are contextualised within a fuller meaning when sense is made and individualised by the actor experiencing and undertaking a particular role. Perhaps not surprisingly, as a role becomes increasingly linked to an individual's sense of self and identity, the individual

often starts to change their behaviour to act in accordance with the role identity (Barley, 1989). In the next section and pivotal to this study is the scientist identity, which although enacted primarily in an organisational setting does not sit outside of wider usage in 'day-to-day' life.

2.4.2. The Scientist Identity

Extant work has examined the scientist identity, predominantly through individuals working in laboratories, and has shown how the organisation within which a scientist works is influential for the construction of role identities and for establishing rules for culturally acceptable discourses (Delaney & Hastie, 2007). Unfortunately, however, limited attention has been paid to the scientist identity in other organisational settings, particularly B2B arenas, which this study directly focusses on. Coupled with this is the way that individuals claiming a scientist identity negotiate issues related to this core enactment, such as power, othering, internal contradictions and gender: these issues are noted as they arise in the analysis chapters, but discussed in more detail in Chapter 7.

Looking in more detail at the extant literature for how individuals construct themselves as scientists has been linked to how individuals perceive an identity, often drawing on cultural understandings by individuals operating within organisations where these identities are prevalent (Cash & Clark, 2001; Cash et al, 2003). The scientist identity has predominantly been constructed as an individual who 'wears a lab-coat, is often eccentric and is usually male' (Jones, 2005: 84). Other attributes linked to the scientist identity have included obsessiveness about work, a limited emotional range, existing as outsiders to 'normal' society, and being knowledgeable and truthful about their areas of investigation (Tosh, 2006; Bassett, 2012), as well as potentially rejecting organisational activities that are perceived to damage their identity (Brownell & Tanner, 2012). Extant research has often focussed on the gender and masculinity of scientific discourses, which have been argued as producing two different ways of talking, one for men, and one for women (Kemelogor & Etzkowitz, 2001). As Keller (1985: 7) discusses, it is important:

> ‘to take serious notice not only of the fact that science has been produced by a sub-set of the human race – that is, almost entirely by white middle-class men – but also of the fact that it has evolved under the formative influence of a particular ideal of masculinity [associated with] ‘virile’ power’.

While extant studies have created a greater understanding of the scientist identity, scholarly attention has predominantly focussed on scientists working in a laboratory or academia at the expense of business contexts (Rothman, 1994), with much still to elucidate in other organisational settings. The use of discourse for constructing identity is pivotal, not only as a means to legitimise but also to delegitimise the identity of another (Acquavella, 1997), but there is limited current knowledge of how scientists engage in discursive delegitimisation and othering of others in a sales environment.

The influence of the organisation that scientists represent on the scientist identity has been examined in a limited number of cases, including scientists engaged in translating scientific discoveries into products, enacting science-orientated organisational environments (Cockburn & Henderson, 1998) and engaging with academic scientists (Baba et al, 2009) amongst others. Little attention has been paid towards scientists carrying out what might be considered non-traditional organisational roles, such as selling and buying in B2B organisations, which this study is focussed on.

While this and the previous section have explored numerous aspects related to self and role identity, the following section moves to examine how changing an organisational role can create changes in identity through individuals protecting against stigmatisation.

2.4.3. Identity and Stigmatisation

The nature of organisational life can mean that individuals can transition from one role to another, including moves to different organisations or to different social spaces within this same organisation. An example in line with this study could be a laboratory scientist moving to work as a buyer or seller. Transitioning from one organisational role to another may also include shifts in identity, where new responsibilities, activities and discourses must be negotiated. Individuals may feel that they are being pulled between two organisational directions, creating internal tensions, potentially impacting on their identity (Beech, 2011; Ellis & Ybema, 2010). Existing within a role-based social and organisational space, individuals experiencing tensions must at times balance conflicting aspects of their identities (Townley, Beech & McKinlay, 2009), where they seek to get others to accept new accounts of their identities (Beech, 2008). As Giddens (1991) argues, in conditions of modernity and post-modernity, all life can be considered full of tensions and identity anxieties, where individuals seek consensus and stability within their identity constructions and claims.

Importantly, any new role may lead to positive or negative perceptions by individuals undergoing them, as well as from the group they are leaving and group they are entering into. Drawing on the thoughts of Goffman (1963), where individuals or groups perceive their actions and inhabited social space will be viewed negatively, stigma and shunning can occur, in turn leading to insecurities forming when they interact with others. Trying to understand stigmatisation, however, can be problematic. Although many variations exist, in this study it is viewed as an individual undergoing an aspect of identity otherness containing a 'mark' of undesirability (Jones et al, 1984), with socially contrary characteristics (Crocker et al, 1998). In the context of this study, an example could be a scientist moving to work as a seller, buyer, or marketer which they or their former group of scientists may regard as an undesirable role, potentially requiring the enactment of new identities to avoid stigmatisation.

Stigmatisation is rarely static, due to changing cultural notions of social desirability, and is instead better thought of as a constantly fluctuating socially

driven process (Parker and Aggleton, 2003). When addressing stigma, the relationship of the individual or group to the sources of stigmatisation must be understood. In other words, individuals and groups exist in social spaces that convey intentional and unintentional information potentially leading to stigmatisation, where people undergoing this process are also their own storytellers, with variable potentials for supporting or rejecting notions of stigma. Looking at this through the lens of identity, we find that identity is not only socially constructed, but also in a state of continual change (Hall, 1990). In this way, it is possible to view identity as being a consequence of stigmatisation, as well as potential resistance to it (Castells, 1997).

For an individual who predominantly self identifies as a scientist, this category can be an important part of an individual's self-construction, with changes to this identity potentially being resisted. Discrimination against different social groups and perceived identities has been shown to increase identity centrality to a preferred or more accepted group (Bourguignon et al, 2006). Thus to avoid being stigmatised, an individual may engage in social group discrimination through the enactment of his or her own identity, thereby inducing closeness to that of a preferred social group. Adopting a particular role identity is argued as a mechanism for individuals to increase their psychological protection against feelings of being devalued (Martire et al, 2000). Within these different complex aspects is a necessity for individuals to be able to co-construct meaning, which is examined in the following section.

2.5. Co-Construction of Meaning

While individuals may carry out sensemaking individually, they also exist as part of larger organisational structures, where language and complex human interactions fuel sensemaking. These interactions create an arena for individuals and groups to influence each other via sensegiving and sensemaking, as well as themselves, and produce not only new sense individually, but within organisations and groups. While individuals still make sense of their world, so do the groups they engage with, and potentially the organisation as a whole (Weick,

1995). Within organisations, the flow of interactions and sensemaking can be complex, with the flow of sense moving between individuals, groups and to the wider organisation, resulting in numerous types of sense being made (Humphreys & Brown, 2002). In this way, individuals, groups and the organisation can all influence each other's sensemaking. The individuals and groups involved in these organisational interactions may all make sense and understand events in similar ways, but also as a consequence of different factors, such as heuristics, positions within an organisation, identity and backgrounds, construct it differently from one another (Brown, Stacey & Nandhakumar, 2008). Not surprisingly, much academic interest therefore focuses on understanding collective efforts of sensemaking. Maitlis and Christianson (2014: 25-26) highlight this:

> 'When sensemaking is seen as taking place within individuals, then collective meaning making occurs as individuals advocate for a particular view and engage in influence tactics to shape others' understandings. In contrast, when sensemaking is regarded as unfolding between individuals, intersubjective meaning is constructed through a more mutually co-constituted process, as members jointly engage with an issue and build their understanding of it together'.

Meyer, Frost and Weick (1998) and Hatch (1999) use jazz orchestras as an example of mutually constructed meaning combined with joint action, where individuals must engage in actions based on a background of complex organisational activity. Stigliani and Ravasi (2012) argue that collective sensemaking occurs between individuals engaging in conversations.

An important aspect of sensemaking is the way that individuals utilise spoken discourse to disseminate sense through the process of sensegiving, which is examined in the following section.

2.5.1. Sensegiving

Sensegiving is a part of sensemaking focusing on sense being made of, in this case, spoken communication. It can restructure a recipient's sense, meaning and view, for example of a product being sold. Sensegiving is a concept first coined by Weick (1969) and further expanded in later years (Weick, 1979, 1995; Weick, Sutcliffe & Obstfeld, 2005). It has been associated with a variety of organisational activities and issues, including change (Bean & Hamilton, 2006), restructuring (Balogun & Johnson, 2004), strategic learning (Thomas, Sussman & Henderson, 2001), the gendering of professions (Helms Mills, 2002) and the exercise of knowledge-based power in organisations (Marshall & Rollinson, 2004). Sensegiving is based on how individuals or groups influence the sense of other individuals or groups. Simplistically, sensegiver communication influences recipient sensemaking and construction of reality towards a directed goal by the sensegiver (Gioia & Chittipeddi, 1991). Gioia & Chittippeddi (1991: 442) argue that while sensemaking focuses on 'meaning construction and reconstruction', sensegiving is concerned with 'the process of attempting to influence the sensemaking and meaning construction of others toward a preferred definition of organizational reality'. As Corvellec & Risberg (2007: 307) suggest, 'the two processes occur in a sequential and reciprocal fashion, whereby cognitive stages of understanding (sensemaking) alternate with active stages of influencing (sensegiving)'.

Corely and Gioia (2004) emphasise the need for sensegiving to be carried out by organisations wanting to achieve collective sensemaking, for instance facilitating the implementation of company strategy. This method has found favour with organisational managers as a method of influencing other organisational members (Maitlis & Lawrence, 2007), but in this study, it is how sellers and buyers influence each other that is of interest. Numerous studies examine sensegiving as a process used to influence the meaning construction of sensemakers (Ravasi & Schultz, 2006). Importantly, Snell (2002) argues that individuals undertaking sensegiving to promote sensemaking are not immune to the effects of their own sensegiving, and may be caught up in it. In this way, sensegiving is not only a one-way process, as a sensegiving seller gives sense not

only to a buyer but to himself or herself as well. Thus sensegiving can be regarded as a complex set of interactions, where all individuals engaging in the process potentially face a reconstruction of sense (Maitlis & Lawrence, 2007). Communication through spoken language is often used as a vehicle of sensegiving. Rouleau (2005) suggests that sensemaking and sensegiving are interrelated through the use of routines and conversations to construct meaning and produce knowledge. As an example of language based sensegiving, Hill and Levenhagen (1995) claim that individuals extensively articulate their vision and carry out sensegiving via the use of metaphor, to simplify the sensegiving communication. An example of this is the militaristic construction of a cancer treatment as being a 'smart bomb'; in the way that it functions and images conveyed about the product.

After discussing sensegiving, the final aspects of the theoretical background for the literature review have now been considered. The next section therefore draws together the research gaps perceived most critical and targeted within this study.

2.6. Research Gaps and Significance of this Study

In conclusion to the literature review, it is apparent that varying contributions already exist for high technology marketing communication, sensemaking, and how scientists construct their role identities. Nevertheless, research gaps are still apparent, and are explored here through the exemplar of nanotechnology, using the following research question: 'how do spoken marketing communications influence sense given and made between sellers and buyers, through the use of discursive co-constructions, and identity claims, in B2B nanotechnology sales?' As such and drawing on Section 1.4 'Significance and Contribution of the Research', there are three main areas considered within this study for research gaps for B2B high technology sales marketing. These areas are (1) the use of spoken marketing communications in the sales relationship, (2) discursive sensemaking tools and (3) the scientist seller/buyer identity. Although these areas are predominantly considered within this section as isolated from each other, this is not necessarily the case, as the analyses of empirical material in Chapters 4, 5

and 6 demonstrate. Throughout the following subsections, the main areas of theory being explored are detailed as well as potential contributions to theory.

2.6.1. First Research Gap: Marketing Communication

The first research gap to be addressed is our understanding of the use of spoken marketing communication in the sales relationship. The discourses used to communicate about products have been shown to be pivotal for buyer purchasing and how well products are adopted into the wider market place, and as such there is still much to understand (Rogers, 2003). While communication is a well-examined area in B2B sales relationships, highlighting the value of spoken interpersonal discourse (Slater, 2014), there is a need to explore how this relates to high technology products and to the users of these discourses (sellers and buyers). In this study, themes linked to research gaps include how sellers and buyers construct their role identities related to products being discussed; how products are discursively constructed, how cultural closeness is achieved through what is said, as well as how sense is given and made. For all of these aspects, discursive constructions of products and people are not necessarily to be taken in isolation from each other, since there is potential for both constructions to influence each other.

High technology B2B marketing studies have shown that technically orientated sellers often focus on one-way communication for the technical aspects of products to buyers (Kotler, 1994; Craig & Douglas, 2000; Kustin, 2010). This has left much to elucidate for the way that sellers and buyers negotiate and co-author product discourses, particularly for easily misunderstood complex high technology products, which we explored in this study. Prior studies have shown that sellers prefer to communicate to buyers in terms of product functionality, which can be at the expense of buyer sensemaking (Yap & Souder, 1994; Herrera, López & Rodriguez, 2002). Although understanding that these practices go on, when homophily is considered as an aspect of background similarity i.e. all sellers and buyers self-identifying as scientists, it cannot be assumed that this simple level of product promotion would be acceptable in the sales relationship.

Expanding on this aspect, this study therefore examines how products are discursively framed and discourses produced to facilitate, or even hinder product selling and buying. This examination is achieved through an in depth exploration of cultural closeness as discussed by the respondents. As a starting point, it is acknowledged that extant literature shows homophilous discourse in seller-buyer relationships aiding sales related to linguistic and cultural closeness, but doing so where the majority of sales relationships are heterophilous (Van den Bulte & Lilien, 2001; Mohr et al, 2001). This study shows the requirement for nuanced discursive practices to aid in the marketing communication of high technology products, to aid in closeness and speaker legitimacy, as well as sensemaking.

2.6.2. Second Research Gap: Discursive Sensemaking

The second research gap to be considered is the use of discursive sensemaking tools to aid in buying and selling, particularly for scientist seller/buyers, which hitherto has received limited academic attention. Not surprisingly, understanding how sellers and buyers use marketing communication to give and make sense has drawn considerable attention from marketing sensemaking scholars (Busemeyer, Hastie & Medin, 1995; French & Funke, 1995; Ellis & Hopkinson, 2010). There has however been a propensity in prior studies to pay greater attention to spoken communication in relation to sensemaking in lower technology environments (Prasad, 1993; Schön & Rein, 1994). This study therefore examines high technology sensemaking through the exemplar of nanotechnology, embedded within conflicting accounts, where rich sets of cultural and linguistic tools can be drawn on by sellers and buyers to make sense of these products. Within this area, aspects such as power, legitimacy, otherness and stigma are all considered within discursive cultural closeness.

The nature of high technology products necessitates an understanding of how sellers and buyers use communication for technical, scientific and functional aspects of these products. Limited studies have suggested the importance of linguistic toolkits (Davies, 2011) and the use of cultural resources (Swidler, 1985) for aiding in sense being given in B2C markets. This study therefore

builds on these prior studies by examining both the use of linguistic toolkits and cultural resources to aid in sensegiving and sensemaking in B2B seller-buyer relationships. Specifically, the aspects of simplification and toolkits such as metaphor are considered for sensemaking.

When considering the high value of nanotechnology products to numerous sectors, it is perhaps surprising that there has not been a greater focus on the discursive elements linked to sensemaking for these products. Prior studies have predominantly examined B2C arenas (Gaskell, 2005; Davies, 2011), and while it may be argued that nanotechnology is an exemplar of high technology, it must be remembered that not all high technologies are the same. As discussed in this chapter, nanotechnology is an often-contested arena where opposing claims are made about the same products, meaning that sensemaking may well be more challenging than for other high technology products. This can be linked to nanotechnology being highly pervasive, and for example being used in medicine, electronics, energy, defence and transportation etc. In many ways it is difficult to find a market that nanotechnology has not touched, or been discussed in relation to, and as such, it is important for research to explore how sense appears to be given and made about these products in B2B sales relationships.

2.6.3. Third Research Gap: Identity

The third and final research gap to be addressed is our understanding of the scientist identity, particularly for the way it is viewed and constructed within B2B sales relationships, which are less typical than laboratory environments. As might be expected, the scientist identity is a complex social construction composed and discursively brought to life through a variety of individuals, social groups and organisations. As noted above, within this role identity is a notion of a 'stereotypical scientist [who] wears a lab-coat, is often eccentric and is usually male' (Jones, 2005: 84). This is alongside other stereotypical aspects of the scientist role identity including obsessiveness about work, a limited and sub-normal emotional range, existing as social outsiders, and being truthful and highly knowledgeable about their area of investigation (Tosh, 2006).

The organisation that a scientist operates within has been argued as highly influential for the construction of role identities particularly for establishing rules for culturally acceptable discourse (Delaney & Hastie, 2007). As discussed by Delaney and Hastie (2007), role identities can exist within different sub-cultures in organisations, where different groups such as scientists and managers can be influenced by different cultures, and as an example, the culture of 'science' for the former, and the culture of 'bureaucracy' for the latter. Needs and expectations of role identities have been argued as coming from cultural understandings by individuals operating within these organisations, with credibility and legitimacy being suggested as pivotal (Cash & Clark, 2001; Cash et al, 2003). This study will expand the extant literature by examining role identities for individuals constructing themselves as scientists in B2B organisational settings as sellers and buyers, with two respondents also further constructing themselves as managers as well as scientist sellers and buyers.

This study will show how a rich discursive toolkit can be used to either legitimise or delegitimise other sellers and buyers, through the use of linguistic tools and cultural reference. Other aspects to be considered will be power, otherness and stigma from what is said and how linguistic tools can be used to influence sense given. Drawing this arena to a close, there are of course many other smaller research gaps identified in the later chapters, but most importantly, how and why scientists engaged in selling and buyers construct themselves and others is what will be elucidated in this study.

Moving on the following chapter focuses on the theoretical and practical aspects considered for the methodology, to address the research gaps identified within this section.

Chapter 3. Methodology

3.1. Introduction

This chapter focuses on the theoretical and practical aspects encompassed in the methodology, including the main sections on methodology, and an examination of the methods used to work the data. To remind the reader, the following section re-iterates the research question, aims and objectives of this study.

3.1.1. Research Question, Aims and Objectives

To address the shortfall in research identified in the previous section, the research question guiding this study is:

> How do spoken marketing communications influence sense given and made between sellers and buyers, through the use of discursive co-constructions and identity claims, in B2B nanotechnology sales?

Building on the research question and extant literature, the research aim used to drive the research agenda and questions during the respondent interview stage is:

> To examine how sellers and buyers discuss their use of spoken marketing communication to give and make sense of nanotechnology products and indeed of themselves.

Within this aim were three research objectives, grounded from an initial literature search and my emic sensitisation to the sector:

1. Through a literature review and examination of current practice, to understand how sellers and buyers use marketing communications to construct their role identities in nanotechnology selling and buying;
2. Informed by a) above, and through a literature review and examination of current practice, to understand how sellers and

buyers use marketing communications to give and make sense of nanotechnology products; and

3. Informed by a) and b) above, and through a literature review and examination of current practice, to draw out the linguistic tools used to give and make sense of nanotechnology.

In the next section the 'Methodology' theoretical underpinnings are detailed to inform and contextualise the practical processes carried out within this study.

3.2. Methodology

In this section, an in depth examination is made of the research framework and underpinning philosophy driving this study for the way in which respondent interviews have been carried out and analysed. The first section considers language and reality.

3.2.1. Language and Reality

The importance of language to the main themes within this study of discursive selling, buying, communication and sensemaking should not be underestimated, particularly for the way that it is used to construct social reality. Within this study, the 'linguistic turn' is drawn on for the way that language is engaged with, with it being an umbrella to describe scholarly interest in how language constructs social reality (Rorty, 1992). The linguistic turn is 'a radical challenge to the idea that language is merely a conduit for communicating information' (Phillips & Oswick, 2012: 439) and can be an important vehicle for researchers in pursuit of producing a deep understanding of management through language (Alvesson & Kärreman, 2000). It is linked to social constructionism (Searle, 2010) in that social reality is at least in part constructed by the way we talk about it, which is a view often shared by discourse analysts (Wood & Kroger, 2000). Briefly, reality shapes language, and language shapes reality. When individuals speak, it is not as simple as them attaching labels to objective reality in a

definitive way, although language is often used in this way. As Fowler (1991: 10) states: 'anything that is said or written about the world is articulated from a particular ideological position: language is not a clear window, but a refracting, structuring medium'.

Importantly, individuals performing discourse-laden activities, become 'practical authors' who shape their organisations (Shotter & Cunliffe, 2003), with discourse being the 'the lifeblood of all organizations' (Boden, 1994: 8). For instance, it is argued that individuals carrying out communication enable institutional facts to come into existence (Searle, 2010). While the importance of language within organisations is commonly accepted, the exact role of language in organisational creation and institutional facts is somewhat unknown. As Searle (2010: 90) states:

> 'We live in a sea of human institutional facts. Much of this is invisible to us. Just as it is hard for the fish to see the water in which they swim, so it is hard for us to see the institutionality in which we swim. Institutional facts are without exception constituted by language, but the functioning of language is especially hard to see. This might seem an odd thing to say because we are often conscious of language when we engage in a conversation, receive a telephone call, pay our bills, answer our e-mail, and so on. What I mean is that we are not conscious of the role of language in constructing social reality. We are aware of such things as the actual conscious speech acts we perform, and we are often aware of such unimportant things as the accents with which other people speak, but the constitutive role of language in the power relations in which we are immersed is, for the most part, invisible to us'.

While elements of this statement may appear obvious, this is not necessarily the case, and there can be a divergence between management theory and practice when it comes to the linguistic creation of social reality. Briefly, while social scientists may hold the belief that language constitutes reality, management practice is often embedded within a realist position, in that language functions to

provide labels that can be ‘stuck’, ‘rubber stamped over’ and ‘attached’ to objects without affecting them in any way. An example of this within the sector being researched in this study and mentioned by a respondent (number 3 – SME CTO) in the following manner is “it is nanotechnology, because that’s what it IS [emphasis]”. For example, a seller attaching a label could disguise that the processes of sensemaking are being carried out about something other than nanotechnology, resulting in a buyer constructing the product as ‘nanotechnology, because that is what it is’. Simplistically, and drawing on the linguistic turn, these practices can result in the phenomenon being altered or changed, which may result in direct realist positions holding considerable ideological power (Searle, 2015). In other words, nuanced approaches are required to unpick discourses being used about easily misunderstood areas such as nanotechnology, to check that it is nanotechnology being discussed and not another phenomenon. It is thus important that this aspect is addressed within this study, to stay as ‘close’ to the phenomenon of interest as possible. To address this aspect, a perspective broadly within phenomenology (a constructionism ontological stance) is used where I attempt to ‘see things from that person’s point of view’ (Bogdan & Taylor, 1975: 13-14). This approach can be considered a more holistic approach that addresses aspects such as ‘how’ and ‘why’, as well as potentially providing understanding in inherently complex social relationships. As spoken views from respondents are used to construct their social worlds, the research approach is classed as ‘interpretative’ mirroring notions of a phenomenological viewpoint. An interpretive stance provides a way to engage with insights from respondents, and coupled with an inductive approach focuses on examining the phenomenon of interest to the study.

Importantly, I embrace subjectivity and acknowledge my role within this study, embedding myself within the research methods used (Willig, 2009). This means that I actively engage with the respondents throughout the interview process, as I believe this has the potential to allow a more thorough exploration of the phenomenon of interest. Within the subjective paradigm, there are multiple potential methods for interacting with social phenomena. A multiple case study approach is taken in this study (an interpretivist methodological approach for developing theory), as discussed in the following section.

3.2.2. Case Studies

Case studies can be defined in many ways (Yin, 1994), with Meredith (1998: 443) using the following definition:

> 'A case study typically uses multiple methods and tools for data collection from a number of entities by a direct observer(s) in a single, natural setting that considers temporal and contextual aspects of the contemporary phenomenon under study, but without experimental controls of manipulations'.

According to Yin (2009), there are three conditions, which can be used to determine which type of research strategy to use in social science, and for whether a case study should be used. These conditions include (1) the form of the research question, (2) the amount of control the researcher has over behaviour events and (3) the level of focus on contemporary events. Table 3.1 shows the relationship between these three conditions and the different research strategies commonly used in business research.

Strategy	(1) Form of research question	(2) Requires control of behaviour events	(3) Focuses on contemporary events
Experiment	How, why?	Yes	Yes
Survey	Who, what, where, how many, how much?	No	Yes
Archival analysis	Who, what, where, how many, how much?	No	Yes/no
History	How, why?	No	No
Case study	How, why?	No	Yes

Table 3.1. The relationship between research methods and when to use them, (Yin, 2009: 8).

Taking condition (1) first, the 'form of research question', Yin (2009) states that the case study method should be used primarily when there are 'how', 'why' or 'what questions', which fits with the research question of this research. This is particularly pertinent when the research question is exploratory and potentially also confirmatory, which it is in this study. Feeling there is a limit for the control I can exert over behavioural events (the second condition), and that this study

focuses on contemporary events, the case study method is perceived as suitable. The overall design of this study, therefore, is based on an empirical approach using an embedded (multiple units of analysis) multiple case study design. In this study, this means that there are two groups of respondents (multiple case study) within several respondents in each group (multiple units of analysis). Thiti (2010) suggests that this approach allows for contingencies (potentially from multiple cases) to be taken into account and for a range of factors to emerge as potentially relevant to the investigation, all of which are not always apparent from previous knowledge or research.

An important consideration for case study research is that any understanding developed by the research only be considered knowledge within the researcher's perceptual framework. This distinguishes case study research from rationalist research, as understanding developed through research is not objectively 'out there', rather it is meaningful only within the framework utilised by the researcher. Bonoma (1985: 203) argues that the goal of case studies is to understand as fully as possible the phenomenon being examined, through 'perceptual triangulation', where 'the accumulation of multiple entities as supporting sources of evidence [can be used] to assure that the facts being collected are indeed correct' (Meredith, 1998: 442).

Case studies are often favoured for carrying out sensemaking research (Maitlis, 2005), but as Allard-Poesi (2005) postulated, deciding how to carry out research in the subjective worlds of respondents is an exercise in sensemaking itself. There has been a propensity for researchers to favour predominantly qualitative methods such as interview-based case studies to provide insight into sensemaking (Maitlis, 2005). Yin (2003) argues that single case studies have been heavily utilised in sensemaking studies as the research design can allow for a wide variety of examples of sensemaking to be studied. More recently however, as the knowledge base of sensemaking has grown, so too has the ability for researchers to utilise multiple case study methods (Kaplan & Orlikowski, 2013).

For case studies, one of the greatest challenges is deciding and defining the area, parameters and population to make up the case(s) to examine the phenomenon of

interest (Yin, 2009). As variables cannot be controlled in interpretive case studies, this necessitates the selection of a sample frame of case studies that will provide insights into the phenomenon of interest. The following section, therefore examines the sample frame for this study, as well as theoretical aspects that informed the researcher about his choices of management respondents to interview.

3.2.3. Sampling

A total of thirteen respondents are worked within this study through semi-structured in depth interviews, from a total of thirteen separate biologically orientated nanotechnology companies. All companies operate in the UK, and are split into MNE selling, SME buying and selling, and MNE buying companies. A pictorial representation of the trading relationships in this sector is shown in Figure 3.1.

Figure 3.1. The trading relationship between respondents, showing the direction of sales, where MNE sellers sell to SME-Seller Buyers, who later sell to MNE Buyers. Importantly, it must not be assumed that the same products are sold along this 'chain'.

The three MNE selling companies make up approximately fifty percent of the sector involved in selling constituent biological nanotechnology products into R&D companies. All R&D companies are SMEs, with the seven companies engaged with this study making up approximately half of the sector, and the three MNE buying companies making up three quarters of the sector. Biological nanotechnology refers to the use of either synthetic or naturally occurring products within the nanoscale range. Examples of products can include DNA, antibodies, thin-films, and nanoparticles, often for healthcare applications.

The sampling frame is the collection of respondents examined to draw out information representative of the phenomenon of interest. Where sampling is

used to discern 'different "types" of behaviour and distinguish the "typical" from the "atypical."' (Mays & Pope, 1995: 110), a choice must be made for whether to use probability or non-probability samples. In a probability sample respondents are selected at random to try to capture the population of interest, with a general perception that such samples can be more representative of populations where this technique is employed. A non-probability sample is not selected at random, and is utilised where some parts of a population are more desired than others for examination (Bryman & Bell, 2011). In this study, the sampling frame chosen is pragmatic, non-probability based, and purposeful, where I selected information rich cases (Wengraf, 2004) to closely represent the nanotechnology sector of interest.

The sampling choice for this study is based on numerous factors such as the ability to access a low number of respondents engaged with nanotechnology selling-buying relationships ('experts'). It was thus not deemed wise to use probability-based sampling, and can be coupled with the thought of Mays and Pope (1995) who argue that using probability-based sampling is not the most appropriate methodology where a study is trying to elucidate and understand social processes, as is the case with this study. Importantly, the use of non-probabilistic sampling does not intend to capture a population, but only the individuals who are of perceived interest to the researcher (Mays & Pope, 1995). Potter and Wetherell (1987) argue that for discourse-based studies, the language being used is of primary interest, rather than the language users. This is not to negate any importance away from the language users but rather to say that it is important to identify language users who can provide the language representative of the phenomenon of interest, and then examine the language used. Selection of respondents is therefore carried out with great care and consideration, with Wood and Kroger (2000: 79) suggesting that:

> 'Selection is thus provisional, but it is not haphazard, as long as it permits the inclusion of discourses that are relevant to the phenomenon of interest. The important point is to avoid unwarranted assumptions about the persons who generate the discourse'.

In case study research, as with other types of qualitative research, the question is often asked, what sample size should be used? Kvale (1996: 101) argues: 'to the common question, "How many interview subjects do I need?" the answer is simply, "Interview as many subjects as necessary to find out what you need to know.' While conceptually helpful, this does not answer the question about what size sample should be used. There are of course numerous suggestions on how many interviews to carry out, with the ongoing debate being captured by Baker and Edwards (2012), where a number of between six and twelve interviews with elites ('experts') is considered 'enough'. In this study, one interview per company was carried out with either a seller or buyer, with a total of thirteen companies participating, meaning a total of thirteen respondents are interviewed. The companies examined in this study are either SMEs or MNEs, with the sellers and buyers often being perceived by other organisational members as having the 'knowledge', and with the rest of the organisational members being perceived as being less suitable as experts.

With the issue of sampling, is the further aspect of generalisability (also known as 'external validity'), which is often perceived as a critical part of research rigour (Wood & Kroger, 2000). Hedrick et al (1993: 40) define external validity as the 'extent to which it is possible to generalize from the data and context of the research study to broader populations and settings'. Many case study researchers believe that findings developed from case studies can potentially be applied to similar situations and even dissimilar situations (Meredith, 1998). More specifically, 'claims are as generalizable as those generated in other forms of research, particularly in experimental social psychology' (Wood & Kroger, 2000: 76). In discourse analytic studies, 'claims are not about variables...they are framed discursively' (Wood & Kroger, 2000: 76). As Douglas (1970: 11) states, discourse researchers try to avoid the: 'fallacy of abstractionism, that is, the fallacy of believing that you can know in a more abstract form what you do not know in the particular form'.

Importantly, and in line with a discourse analytic perspective the main focus is on the quality of respondent discourses, where the contextualisation of findings does not rely on statistical methods. Moving beyond the sample size is the theory

underlying the method used to guide and examine respondent interviews, which is considered in the next section of discourse analysis.

3.2.4. Discourse Analysis

Discourse analysis is not only a methodology but also a conceptual way of looking at social life. It enables an examination of almost any social science area through the examination of discourse. Wood and Kroger (2000: 3) state that: 'discourse analysis entails more than a shift in methodology from a general, abstracted, quantitative to a particularized, detailed, qualitative approach'. In this section, a number of pivotal assumptions that act as a foundation for carrying out discourse analytic studies are explored.

The formation of discourse analysis has its roots stemming from perceived difficulties in the methodologies of sociological research. Problems include the incapability of social scientists to be able to determine the 'validity' of complex statements, which are often outside of their knowledge. This is alongside the challenges of carrying out analysis on methods where the method of interpretation used is obscure. Gilbert and Mulkay (1984) argue that much sociological research is built on a naïve view of language, where a social event has only one 'true' meaning. Instead, utterances (descriptions, anecdotes etc.) used by respondents can be regarded as depending not only upon the context in which they are produced, but as a reflection of the functions they perform. Rejecting a naïve view of language, and moving to a discourse analytic perspective for example, does not necessarily take a high frequency of the 'same' utterances as a literal mirroring of the social world, rather an artefact of its collection (Halliday, 1978).

There are multiple perspectives, descriptions and definitions of discourse analysis and arguments over what constitutes discourse i.e. spoken language and written language. In this study, the approach offered by Potter (1997) is favoured, which Wood and Kroger (2000: 3) argue 'is an approach to definition that views

discourse not just as an object, but as a way of treating language'. Potter (1997: 146) defines discourse analysis as:

> '…an analytic commitment to studying discourse in texts and talk in social practices. That is, the focus is not on language as an abstract entity such as a lexicon and set of grammatical rules (in linguistics), a system of differences (in structuralism), a set of rules for transforming statements (in Foucaldian genealogies). Instead, it is the medium for interaction; analysis of discourse becomes, then, analysis of what people do'.

Discourse analysis can be applied to numerous situations including naturally and non-naturally occurring talk, with an example of naturally occurring talk being a spontaneous or unplanned conversation, and non-naturally occurring talk being an interview. This study is interested in interview-based talk, which can be considered restricted by the interests and formulations of the researcher (Edwards, 1997; Potter, 1997). This raises an important aspect of the discourse analytic researcher, in that classically interviewers can be expected to be neutral and uninvolved (Potter & Wetherell, 1995a). This however is not the case for discourse analytic interviewers, as they are required to be an active participant in partnering constructed meaning with the respondent (Holstein & Gubrium, 2002). Importantly, no single answer is sought to any question, but rather a multitude of answers accepted and facilitated through the respondent being able to answer to their fullest account, and to their satisfaction. Practically, this is achieved through the interview being conversational, where Potter and Wetherell (1987: 164) state that the interviewer:

> 'should try to generate interpretive contexts in the interview in such a way that the connections between the interviewee's accounting practices and variations in functional context become clear'.

In discourse analytic studies, language is not limited to being a descriptive tool or as a medium of communication, but is a social practice and a way of doing things. Discourse is thus given a central role in social life, where the

phenomenon of interest is constituted in and through discourse (Wood & Kroger, 2000). As Sampson (1993: 1221) states: ‘discourse theorists maintain that talk is constitutive of the realities within which we live, rather than expressive of an earlier, discourse-independent reality’. More simply, discourse can be viewed as createing the social world and is not limited to reflecting what is perceived to be there. Importantly, discourse does not deny physical reality, but is a means through which physical reality is understood, unpicked and socially interacted with. Sampson (1993: 1222) argues that:

> ‘The very objects [and events] of our world are constituted as such in and through discourse. There is no meaning to reality behind discourses that discourse represents: in the representation lies the constitution of what we come to accept as real’.

Wood and Kroger (2000) suggest that discourse analytic studies require a departure from more conventional thinking about discourse. In particular, (1) there is a distinction between discourse and action, (2) from discourse being a vehicle to events, when it is discourse that is of interest, and (3) moving away from considering variability as anomalous to being of importance within and between people (Potter & Wetherell, 1987).

Looking first at the assumption that language is action (Austin, 1962), where utterances not only have a meaning but also do things, the thoughts of Wood and Kroger (2000: 5) are considered:

> ‘Specifically, utterances can be considered in terms of three features: (a) their locutionary or referential meaning (what they are about), (b) their illocutionary force (what the speaker does with them), and (c) their perlocutionary force (their effects on the hearer)’.

For example, if an executive manager says to a sales manager "You bought the product", there are multiple ways of viewing this statement. The first is a ‘factual’ statement, in that a purchase is made, but digging deeper is the potential inference of further intention such as criticism or praise, and the need for a

discourse analytic researcher to emphasise what the discourse is doing and achieving. In this example, a purchasing criticism can be intonational on the part of the speaker, emphasising dissatisfaction through highlighting the word product.

Moving on to the second point where it is discourse that is of interest to the researcher, entails a focus on the discourse and not just on the phenomenon of interest, which is contrary to more classical approaches. The emphasis of this approach takes a step away from looking at discourse as a vehicle to understanding what people 'really' think (Potter & Wetherell, 1987). This stance is based not in the challenge of knowing what is in another's mind but that all a researcher can access is discourse. Another way of looking at this is that irrespective of what may be 'real', it is discourse that is used to construct and describe the social world. Importantly, these aspects do not mean there is a lack of consideration shown to the phenomenon of interest, but as Wood and Kroger (2000: 9) argue:

> 'generally speaking, the topic for discourse analysts is more properly framed not as language or talk, but in terms of the phenomena that are constructed discursively (e.g. racism, abuse), that is, in terms of what people are doing with words'.

An example of this aspect could be a seller asking, "Would you like to purchase this product?" with a buyer response of, "I'm sure I will buy it". Discourse analysis does not intend to determine the literal element of the buyer's response. The researcher and seller may well be interested in the use of the buyer's response, which is accepting an invitation to purchase a product. The buyer's utterances has multiple aspects attached to it, including the words "I'm sure", which is not required to purchase a product. This utterance potentially facilitates a buyer not buying the product, perhaps due to examining other products, or needing management 'say so' to make a purchase, so while there is buyer acceptance, there is also 'wiggle room' in the buyer's response. There are of course other possibilities for this kind of statement with a need to examine the utterance alongside the wider context (Wood & Kroger, 1995).

The discourse analytic perspective regards variability as a feature of discourse. In many of the more standard social science approaches, variability is regarded as problematic due to a pursuit of common laws, and where variability can slow or even inhibit the production of such laws, often meaning that it is regarded as a nuisance or even discounted as an error. Problematically, discounting variability as a nuisance or error potentially reduces the richness of social life, and while laws can be produced, arguably they capture less of the social world being examined (Potter & Wetherell, 1987). In contrast to the more standard approaches, discourse analysis actively engages with variability, accepting that an individual might use different talk for different situations, purposes and audiences. For a discourse analytic researcher, understanding variability can be critical for coming to a greater understanding of the discourse and phenomenon of interest. It is thus often expected that multiple discourses about the same phenomenon might be constructed. Discourse analysis supports the concept that multiple choices exist during discourse, including what is not said, and thus creates a creative opportunity for the analyst to engage with this facet. The continued reworking of data in a playful manner can aid in the goal of the analyst to explain what is being done in the discourse (Potter & Wetherell, 1987). Simply, 'analysis essentially consists of a detailed and repeated reading of the discourse against the backdrop of the discourse-analytic perspective' (Wood & Kroger, 2000: 95).

For actors at the extremities between organisations, as in selling and buying, a discourse analytic perspective has much to offer for unpicking the nuances of organisational life (Phillips & Hardy, 2002; Mattson & Johanson, 2006).

After examining wider methodological aspects, the following section moves on to detail the methods.

3.3. Methods

In this section, the methods are shown, detailing how the practical elements of this study were carried out. The first stage that is examined in this section is the respondent interviews.

3.3.1. Respondent Interviews

The respondent interview stage consists of interviewing thirteen 'experts' individuals (three MNE sellers, three MNE buyers and seven SME seller-buyers) from biological nanotechnology companies, to allow the collection of primary cross sectional data. This study uses inductive and exploratory research, which examines marketing communication and sensemaking processes in B2B environments. This is an emic approach (Kottak, 2006), with a degree of etic work also being undertaken as I as the researcher have been and am still being sensitised to the sector and academic literature respectively, which guides this study. Briefly, the emic approach considers how 'local people' perceive and explain the world, whereas the etic (often linked to a scientist-orientated) approach is based on shifting the interpretation and explanation to the researcher (Kottak, 2006).

In-depth semi-structured interviews were carried out with all interviewees in a private room at the selling and buying companies, with open and expansive questions to allow the interviewees to explore the topic being discussed (Smith et al, 2009). As Benney and Hughes (1970: 176) state, interviewing is a 'favoured digging tool' of social scientists. Importantly, the respondents were made aware of the specific questions (as shown in Table 3.2) before the interview stage, to facilitate the respondents agreeing to carry out the interviews.

Through the use of semi-structured in depth interviews 'the interviewer [leads] the subject to certain themes, but not to certain opinions about these themes' (Kvale, 1996: 34). The questions asked are used to act as a flexible interview guide (Warren, 2002). Following the work and suggestion of Rapley (2004), I

attempted to genuinely engage with the respondents rather than asking tightly bound questions. No more than three, two-hour interviews were carried out per day, as recommended by King (2004). The nature of the interviews created opportunities for respondents to provide additional insights (Verma & Sinha, 2002), with Table 3.2 showing the questions asked and the rationale for their use.

Questions	Rationale
1. 'What is your position within this company?'	To understand respondent backgrounds in work, education and other areas that they perceive relevant to their position and the basis for this. Bluntly, are they a scientist?
2. 'Could you tell me about selling/buying within this company?'	A background contextualisation to the organisation, and individuals responsible for carrying out activities within buying-selling are to set up the rest of this study.
3. 'What high technology products do you sell/buy?	To examine the companies selling and buying products and to contextualise aspects such as the goals of these activities. It also highlights whether a company manufactures high technology products, or is just selling, and has a potential to link to the backgrounds of individuals within the companies.
4. 'Who makes selling/buying decisions?'	As Ford (2002) argues, the seller-buyer relationship is at the centre of inter-company relations, but understanding who makes decisions is pivotal for drawing out many of the actions carried out in the seller-buyer relationship.
5. 'What value do you place on understanding high technology/nanotechnology for the process of buying/selling?'	This aspect is regarded as pivotal for understanding the opacity and complexity of high technology products (Sperry & Jetter, 2009), in relation to the following considerations of marketing communication, and sensemaking.
6. 'How is marketing communication used in selling/buying?'	A contextual overview of marketing communication is considered here, with a focus on high technology and nanotechnology. Both direct and inadvertent forms are considered (Ekli & Sahin, 2010).
7. 'How is spoken communication used in selling/buying?'	This draws on personal selling (Slater, 2014) seeking to understand the contextual aspects of this action e.g. inducing dyadic closeness. Homophilous/heterophilous aspects are also considered to understand how talk is linked to an individual's background (Rogers, 2003), to further consider the difficulty of selling in heterophilous situations. (Mohr et al, 2001)
8. 'Who controls spoken communication used?'	This elucidates the role of the seller/buyer within their organisation and verbal communication, i.e. who makes the decision of what to communicate (Rogers, 2003).
9. 'What is your perception of spoken communication as a method of making sense about products?'	Marketing communications delivered through individual sellers are used in a variety of ways for constructing the sense that buyers make of products (Krush et al, 2013), but with much understanding for high technology still required.
10. 'What happens if the seller/buyer does not understand what you mean?'	As Probert et al (2013) argues it is not enough to assume that a buyer can grasp the potential of technology products being sold. Thus an examination of aspects such as linguistic tools is considered to expand on the B2B study by Davies (2011), for how sellers communicate about high technology products.
11. 'Are there any areas or aspects that I have not covered that you feel are important to the process of selling/buying?'	Finally, respondents will be asked to detail any areas or aspects that they feel are important beyond what the researcher raised during interview. This is a pivotal part of the interview stage, to address perceived shortcomings.

Table 3.2. The areas and questions explored in the main study

Briefly the first question asked set up the interview process by examining how respondents construct their self-identities. Questions 2 – 5 move on to create an opportunity for respondents to discuss multiple aspects of selling and buying, and how they position themselves within this process. Questions 6 – 8 examine communications within marketing, focussing on how and why specific communications may be used. This leads on to question 9 and 10, which seeks to understand how respondents use discourses to give and make sense of selling and buying. Finally, question 11 gives an opportunity for respondents to discuss anything that they feel important that was not raised throughout the interview process.

The collection of interview data is pivotal, with the following section going on to consider working with the data.

3.4. Working with the Data

In this section, the practical aspects of working with recorded and subsequently transcribed data is examined. This includes detailing the practical and theoretical aspects of how discourse analysis is undertaken, alongside how trust in the findings is achieved through the process of warranting.

3.4.1. Construction of Transcripts

Respondent interviews were captured by dictaphone, with each in depth semi-structured interview lasting between fifty-five and seventy minutes. After carrying out each interview, transcription was started on the same day, with a 'draft' transcription being completed within twenty-four hours, thus broadly following the '24-hour rule' set out by Eisenhardt (1989).

Importantly, the data in this study is the recorded interview, and following transcribed data set (Hutchby & Wooffitt, 1998). A verbatim account of transcribed data is judged imperative to capture the interviews, with the danger

of missing out spoken discourse leading to an over simplification, idealisations and unacknowledged interpretations (Heritage, 1984). While it is not possible to capture everything from the interviews (i.e. all pauses, non-verbal intonations etc.), I do attempt to capture what is perceived as relevant, to 'maintain the message' (Bavelas, 1990: 6). This led to a question of how to transcribe the data? With multiple approaches being available. For example, the orthographic approach uses conventional spellings, and the phonological approach modifies the orthographic approach through a combination of words, quasi-words and other symbols (Schlegoff, 1980). In this study, an adapted approach from Jefferson is used and is detailed more fully in Atkinson and Heritage (1984). Briefly though, the broad approach taken to simplify transcription and used within this study occurs through an attempt to stay 'true' to the spoken discourse used. In this way, only limited transcription coding and phonological inferences are used, and instead, a more overviewing process carried out, where the transcription stays true to itself, but further unpicking and working of the data can be undertaken.

To strengthen the research claims that can be made, warranting of transcribed respondent discourse is carried out by returning transcripts to respondents, where they can discuss how the transcriptions reflected their recollections of the interviews, to confirm whether they were perceived as a reflection of the interviews carried out (Miles & Huberman, 1984). While undertaking this process, no significant amendments to the transcripts were required.

In the next section, the practical aspects of 'Doing Discourse Analysis' carried out in this study are explored.

3.4.2. Doing Discourse Analysis

The aim of this part of the research is to explain what the discourse reflects and 'how this is accomplished, that is, how the discourse structured or organized to perform various functions and achieve various effects or consequences' (Wood & Kroger, 2000: 5).

Due to the nature of discourse analysis, multiple routes and specific steps can always be taken, with no definitive sequence of steps being recognised (Wood & Kroger, 2000). Hutchby & Wooffitt (1998: 93) argue that researcher techniques "rely as much on what Shenkein (1978) described as the 'conversation analytic mentality' [or more generally, the discourse-analytic orientation] as on any formal rules of research method."

As a starting point, each recorded interview was listened to several times, with continued reworking of the transcript being produced and read, and with multiple interpretations being produced. Procedurally, the discourse analytic stance suggested by Potter and Wetherell (1987) is taken throughout the analysis stage after the data has been transcribed. In carrying out the analysis, it is recognised that my sensitisation as the researcher will influence the analysis (van den Hoonaard, 1997), based on my having worked as a nanotechnology buyer and seller, with this element being continually reassessed throughout this stage. In practicality, this means that I attempt to bring to light my own preconceptions of the research findings, and contextualise them against what they mean to the respondents. This is broadly in line with a phenomenological stance to transcription (Hycner, 1999), but focuses more on my interaction and working of the data in line with a discourse analytic perspective, than for example bracketing my preconceptions.

In carrying out discourse analysis, the following suggestions are followed from Wood and Kroger (2000: 91-95) and have been used to construct Table 3.3.

Number	Procedural Suggestions
1	‘As you are reading through a text, ask yourself how you are reading it and why you are reading it this way’.
2	‘Do not ignore the obvious; it may be important, or it may at least provide a place to start’.
3	‘Assume that a focus on the literal meaning of an utterance…may be the least helpful analytic strategy’.
4	‘It is important (although often difficult) to consider what is not there (in terms of both ‘content’ and form)’.
5	‘Similarly, consider whether the critical issue is that something is in included, not what it is (its particular content, etc.)’.
6	‘Play with the text. Ask how it would read if a particular (word, phrase, etc.) were omitted, phrased differently (i.e. consider substitutions), or combined with some other item’.
7	‘Look carefully at how text is structured, shaped, and ordered in both individual segments and overall, because structures are ways of achieving both content and function’.
8	‘Be alert for multiple functions of discourse, which may or may not have been picked up through multiple markings of topic, content, structure and so on in the initial reading’.
9	‘It can sometimes be helpful to forget temporarily that you are doing data analysis…’.
10	‘You will probably find that there are not always appropriate terms available for describing discourse and naming its functions’.
11	‘Categorization is not only an activity of the analyst; rather participants themselves construct and use categories for various purposes’.
12	‘In addition to focusing on variation and adopting a comparative stance, adopt a questioning stance, that is, take nothing for granted’.
13	‘The more familiar you are with the language and how it is used, the more sensitive will be the analysis you can do’.
14	‘In a sense, all of the ideas that you can muster will constitute your analytic resource’.
15	‘Finally, give yourself permission to be an analyst, that is, to do the sort of interpretive work that is involved in analysis, in generating ″results″ (vs. more conventional approaches, in which interpretation is allegedly suspended until the results are in’.

Table 3.3. Procedural suggestions for the discourse analysis stage.

Throughout this stage, patterns and similarities are sought to further elucidate the meaning of the discourse. Potential relationships discussed by buyers and sellers are examined and linked to their perceptions of their organisational lives. This is alongside looking at similarities and differences between buyers and sellers as groups. While a continuous examination is made for discourse that supports developing claims, notice is also made of cases that do not appear to support claims, or have the potential to necessitate a change to the claims being made.

Of particular interest to this study, is the use of linguistic tools such as metaphor and narrative etc. to facilitate the giving or making of sense about nanotechnology products and how they are constructed with use of cultural

references. While from my sensitisation to academic literature, linguistic tools appear to have a propensity to draw on creative or exotic references (i.e. a cancer treatment being a 'therapeutic missile') a deeper examination is made through the analysis for the tools used, including metaphor (Lakoff & Johnson, 1980). This effort is made to appreciate the fullest use of sense-orientated language.

Greater detail of the discourse analysis working is shown in Appendices D – H, but briefly, the following method of pulling together these appendices is detailed. After carrying out the interviews and transcriptions, the transcriptions were read several times, as well as listening to the recorded interviews to gain an overall feel of the main emergent discursive themes. Recognising that further investigation and working with the data might lead to adjustments of main themes, I left it open to alter these themes if perceived necessary. Building on the transcribed data (partially shown in Appendix D), content analysis is carried out and detailed in Appendix E, which through the examination of frequency highlights potentially relevant overt themes brought to life through respondent discourses. Through content analysis, simple constructions of how respondent construct their relevant social structures can be highlighted (Halliday, 1973). Upon completing this stage, analytical coding is carried out, with examples being shown in Appendix F, seeking to bring to life the importance of respondent themes, and start to contextualise them in light of this study. This in turn led to the construction of discursive themes and the frequency of themes and their potential importance based on the frequency of their use. This is a particularly useful part of the analysis stage, as it enables an examination of discursive repertoires within the main themes, and enabled repertoires (nodes) to be seen as dendrites of a main theme tree. The main theme, repertoire tree and node theme is continued in Appendix G, where demonstrative respondent repertoires are detailed for each node and tree, facilitating a simple view of the repertoires used by respondents to position discursively given stances. Finally, Appendix H is used to pull together expansion analyses, which enables the use of all prior appendices (D – G) to be used to carry out discourse analysis.

Throughout the discourse analysis stage, maintaining the integrity of respondent discourse features is paramount, although it is often reworked and further

contextualised (Wood & Kroger, 2000). As such, quantification is kept to a minimum and is perceived as useful for pre-analytic work, and to support the prominence of themes emerging from and important to the respondents (Schlegoff, 1993). Where in doubt about any part of the analysis being undertaken, is the potential to consider it against the whole and also taken guidance from the respondents (Wood & Kroger, 2000).

Upon completing (although arguably not finishing the analysis stage, as the discourse can always be reworked), a consideration is made of the justification for discursive claims made, which is discussed in the following section.

3.4.3. Warrantability

'Warranting consists of providing justification and grounds for one's claims' (Wood & Kroger, 2000: 163), and is a process often used in discourse analytic studies. The discourse analytic approach towards warranting is quite different to the positivist approach where warranting can be taken to mean 'reliability' and 'validity' where claims are often backed up by statistical analysis (Rosenthal & Rosnow, 1991). Importantly, the way that a researcher views their research in light of subjectivity and objectivity is pivotal for whether warrantability or reliability and validity are used as a measure of research 'quality'. As discourse analytic and interpretive studies (such as this) accept that there can be multiple representations of reality, all of which are discursively presented, it is not easy to reconcile this view with the concepts of reliability and validity in a more traditional sense, thus warranting is preferred (Tracy, 1995). Further to this, differences in responsive accounts in discursive and interpretive studies are not linked to error, but more to the discursive process, which produces multiple accounts of phenomena. This necessitates the use of warranting rather than validity as a check upon the research carried out.

In warranting procedures, the ability to discern how discourse analysis is carried out is paramount. This is 'not so that that the research can be replicated, but to provide a context for understanding claims' (Wood & Kroger, 2000: 169). As

Potter and Wetherell (1994: 63) argue, this is so that 'readers of discourse analytic studies need to be able, to an important extent, to perform their own evaluations of the analytic conclusions'. In practicality, this is often achieved by detailing the procedures utilised throughout the discourse analytic stage, and in this study is shown in Appendices D – K, to act as an audit trail (Guba, 1981). Wood and Kroger (2000: 170) state that 'demonstration is arguably the key requirement for warrantability; it reflects the core of the analytical work'. The element of demonstration transcends analysis simply telling the reader with an example excerpt, and highlights an argument based on analysis. This creates an opportunity for the discourse analyst to gleam further insights from their workings, but also opens the door for readers to interpret the work and draw their own interpretations. In effect, the first stage is carried out by analysis, where interpretations and claims are made, and then warranting carried out to support them. Thus analysis and warranting are approached differently, where the route to producing an interpretation may well be different from the later warranted justification for the analysis.

In the following section, a consideration is made of my sensitisation as the researcher to the aspects explored throughout this study.

3.4.4. Researcher Sensitisation

My sensitisation as the researcher through prior engagement with the phenomenon of interest in this study is a complex issue and potentially influences subjective data analysis, as well as the construction of the study as a whole, and is thus explored in this section.

Academically, I have both undergraduate and post-graduate qualifications in the natural sciences, examining and carrying out high technology nanotechnology R&D and marketing. This has been as well as working as an R&D and executive manager in a UK based SME focussing on nanotechnology commercialisation, including selling and buying. This means that all of the respondents interviewed in this study were aware of me, but that we had not met prior to this study.

Importantly, I felt that my emic sensitisation allowed a high level of access to respondents that might not have been possible if I was viewed as an outsider (Layton, 1988). It also favoured discursive homophily used between the respondents and myself, again capable of inducing cultural closeness and trust (Owusu, 1978). Throughout this study, I was aware of the thoughts of Schutz (1932), who claims that interpretive methods (as used in this study) mean that a researcher's awareness and meaning are obtained by 'reflecting' back, or casting a retrospective glance upon lived experience. This was apparent in much of the respondent discourses and transcription where I continually reflected back on my organisational experiences. While based within a subjectivist interpretive stance, the emic approach was contextualised against extant literature where I straddled the research etically as well.

3.5. Summary

In this chapter the research methodology is examined through an interpretive research paradigm and with the use of multiple case studies, by semi-structured in-depth interviews with sellers and buyers engaged with high technology and in particular nanotechnology. Practical and theoretical aspects are explored for carrying out the research via respondent interviews, alongside data examination by discourse analysis. Finally, the aspect of warranting and generalisability is considered to increase the confidence in research findings. Importantly this strategy is considered appropriate and useful for drawing out complex social structures and processes constructed through respondent discourses.

After considering the methodological aspects of collecting and working the data, the following chapter goes onto examine the findings and analysis as they relate to a main theme of science.

Chapter 4. Findings and Analysis I: Science

4.1. Introduction

This chapter examines the findings and analysis for respondent constructions of science as something they engage with through their activities as sellers and buyers, as well as something they studied in academia. Coupled strongly to the construction of science, is how the respondents view themselves as linked to science through having worked as scientists and still identifying as such, albeit in nuanced ways. It sets up a foundation for the following two chapters of 'Selling and Buying' and 'Sensegiving and Sensemaking'. Pivotal to this and the following two chapters are Appendices D – H that detail the critical aspects of how the data are worked for claims made.

Throughout this chapter, there are numerous discursive themes ranging from major to minor, and which in many instances overlap, and highlight the importance of science as a discipline, and of the scientist role identity to the respondents in this study. In line with the methodology of this study, the themes drawn out were elucidated by what the respondents said. Thus, the major themes were constructed in part through what the respondents said, and are shown in Table 4.1 to highlight the areas of importance that will be discussed throughout this chapter. This is alongside examples of respondent statements being provided to show how what is said is important to the themes, as well as being demonstrative. Critically, and as the examples suggest, aspects such as the scientist being powerful, knowledgeable, and persuading others through rhetoric are all key themes. This is alongside creating a sense of separation from scientists as a group, where non-group members are othered as outsiders.

Themes	Demonstrative respondent statements
Identified as scientist	'I sit as a scientist and manager…I'm a scientist, chemist actually, and manager second, science defines me, not management, although…I do manage'.
Science as truth	'Science is truth! Only way! All that matters! Science is what is!'
Science as power	'Knowing science means you can't be challenged, own language, no outsiders allowed inside'.
Scientism	'Look, the scientific method is all that counts! It lets us know everything'.
Knowledge is power	'We hold the power, as we have the knowledge, we understand the world!'
Rhetoric	'Companies looking for scientific solutions to their problems buy nano!'
Otherness (not one of us)	'Marketers are not like us, they are untrustworthy, you can trust another scientist'.

Table 4.1. Science themes and discourses.

As a starting point and owing to its pivotal nature, the following section opens up the first theme of the respondents as scientists.

4.1.1. The Scientist

The initial exploration within the interview stage predominantly considers identity and particularly respondent identity. This is facilitated by the initial question of 'What is your position within this company?' While this question seeks to draw out how respondents perceive and construct their organisational position, it also seeks to develop an understanding of how and why respondents construct their self-identities. This question intends to be open enough to enable a variety of answers, whereby respondents are given their own voice and opportunity to explore aspects important to them but also driven by me as the researcher. Although this opening question facilitates much of this chapter, other question-led discourse also enables insights to be constructed throughout the interviews and adds to this chapter. Based on the initial question, the way the

thirteen respondents produce their self-identities for their organisational positions and backgrounds are shown in Table 4.2.

Respondent ID	Sex	Self ID Discipline	Academic Background	Professional Background
1. SME CEO	M	Scientist and Manager	Scientist and Management BSc Biology, MSc Biology, MBA	Scientist and Selling/Buying
2. SME Buying/Selling Manager	M	Scientist	Scientist BSc Chemistry, MSc Chemistry	Scientist and Selling/Buying
3. SME CTO	M	Scientist	Scientist BSc Science, MSc Biology	Scientist and Selling/Buying
4. SME MD	M	Scientist and Marketer	Science and Marketer BSc Biology, MSc Biology, MBA	Scientist and Selling/Buying
5. SME CFO	M	Scientist	Scientist BSc Chemistry, MSc Chemistry	Scientist and Selling/Buying
6. SME CTO	M	Scientist	Scientist BSc Physics, MSc Materials	Scientist and Selling/Buying
7. SME Buying/Selling Manager	M	Scientist	Scientist BSc Physics	Scientist and Selling/Buying
8. MNE Seller	M	Scientist	Scientist BSc Environmental Sciences	Scientist and Seller
9. MNE Seller	M	Scientist	Scientist MSc Chemistry	Scientist and Seller
10. MNE Seller	M	Scientist	Scientist BSc Chemistry, MSc Engineering	Scientist and Seller
11. MNE Buyer	M	Scientist	Scientist BSc Biology	Scientist and Buyer
12. MNE Buyer	M	Scientist	Scientist BSc Biology, MSc Virology	Scientist and Buyer
13. MNE Buyer	M	Scientist	Scientist BSc Chemistry, MSc Chemistry	Scientist and Buyer

Table 4.2. Respondent self-identification within their organisations.

Looking at Table 4.2, all seven SME respondents self-identify as seller-buyers for nanotechnology products, even though there is variation in organisational titles used by the respondents. Each SME respondent is in a senior level of management, and apart from the CEO and MD, all respondents have managers operating in a higher position to them. MNE respondents are split through self-identification into sellers (respondent numbers 8 – 10) and buyers (respondent numbers 11 – 12), with no suggestion of deviating organisational positions. Although these divisions may appear blunt, they are also insightful, and the scope of the interviews enables the respondents to produce more nuanced expansions, as discussed in this section. Data to support the claims for self-identification is shown in Appendix E, given as overt themes.

Irrespective of the three self-identified splits of (1) SME seller-buyers, (2) MNE sellers and (3) MNE buyers, all respondents predominantly promote their self-identities as scientists. This is highlighted within Appendix G, which shows the high frequency of repertoires used to support this claim. Thus it is perceived pivotal to elucidate why the respondents self-identify in this way and what it might mean for their organisational roles in selling and buying. Exploring this aspect, the most prevalent discursive theme for a respondent to identify as a scientist is having a natural sciences degree. Repeated comments demonstrate the importance of having studied a degree in science, with only variants of biology, chemistry and physics being argued as valid, and with higher-level scientific qualifications appearing to be less important. This is shown by an SME CTO (respondent number 3) saying, ‘it’s having a science degree that makes me a scientist! It’s the only way to become one’. The same respondent also indicates that a non-valid science qualification is ‘some fool who studied science outside of chemistry, biology or physics…like a social science…or sports science’. Looking at this aspect further, Table 4.2 shows example discourses given by the SME CEO (respondent number 1) stating, ‘I sit as a scientist and manager…I’m a scientist, chemist actually, and manager second, science defines me, not management, although…I do manage’. As is explored throughout this chapter, the respondents continually negotiate the scientist and manager identity.

Of further importance to being a scientist is the requirement of 'having done science in a lab' in industry or academia after completing their studies, although with little importance attached for currently doing so. Short comments are favourable, in what appears to be a quick discursive vehicle to demonstrate legitimacy as a scientist. A distinction worth noting however is that although all respondents have worked in a laboratory, no respondent at the time of interview still carried out laboratory work, which again raised the question of what makes these respondents self-identify as scientists? One view echoed by the respondents is that as they had worked as laboratory scientists, they will always claim to be scientists, and even more importantly 'will always be scientists'. Digging more deeply into this aspect, other answers are given, and include the ability to think and speak like a scientist. An example from an MNE buyer (respondent number 12) states 'I have the mind of a scientist, and I speak like one. I'm trying, trying to think how to explain this to you. Hmmm, yes, well I just see the world through the eyes of a scientist'. Such expressions of having 'the mind of a scientist', 'eyes of a scientist' and/or 'language of a scientist' are prevalent from all respondents. Further insight is given by the same respondent (respondent number 12) who comments that 'our words are precise! None, none of your marketing mumbo jumbo here. We know the world as the language of science enables us to see and describe it. And, and, speak to other scientists'. This is a critical theme raised by this respondent in that science has its own language and discourses, and importantly it appears that the respondents are constructing their use of 'scientific language' as different to 'common language' or 'marketing language'. These constructions of different languages again utilise short comments, which are potentially easy to remember for the speaker and audience, and can be linked to a potential to persuade simply.

The aspect of 'different' languages is considered throughout this chapter and following chapters for how role identity positioning is achieved through spoken communication. For now though it can be linked to the role identity of respondents as scientists, where as scientists respondents position themselves 'closer to knowing, understanding and speaking about the world'. With discourse appearing to be central to respondent role identity, an examination is made of what discourses are considered 'scientific' and legitimate for being an authentic

scientist. As an MNE seller (respondent number 10) states 'science sentences have to be used right! So I say, DNA is…and you say…a double helix. It can be simple but you have to know, or you're not one of us'. The issue of respondents constructing science as a separate language is considered throughout this chapter, as it pervades all of the main themes. These discourses show a propensity for short memorable statements that seem 'about right' to the listener. Looking at the previous statement by an MNE Seller (respondent number 10), this is shown by what appears to be a game of 'So I say, DNA is…and you say…a double helix'. Such discourses are potentially powerful for inducing dyadic closeness between individuals, where a discursive game can give legitimacy to both parties, but ultimately to be successful as such, both parties must play.

Going back to the question of what it means to be a scientist, the issue is explored through the potential use of the scientific method. For example does the perception of or use of the scientific method influence being a scientist? And do these aspects have any influence or impact on the selling/buying event? This produced a variety of responses, and I believe that through the respondents' promotion of themselves as scientists, they have potentially manoeuvred themselves into feeling a need to validate themselves on this point. This appears to have created a stressful situation for some of the respondents, with respondents showing confusion over what things might constitute doing science, being a scientist and what is regarded as the scientific method. The scientific method is predominantly argued as being something that each individual does as a scientist, but with little knowledge about what it is and how being a scientist is linked to the scientific method. An example is shown by an MNE seller (respondent number 8), who states 'Look, it's what we do! Nobody has time to think of this stuff, we're not philosophers y'know'. In the interviews I made no comment as to what my interpretation and construction of the scientific method might be. Respondents were keen to argue that as holders of natural science degrees, and with an ability to 'correctly' use technical terms, they are and will always be scientists. The overriding claim to being a scientist is demonstrated by one SME buyer/seller (respondent number 7) who states that, 'I'm a scientist because that's what I am. I say I am so I am! When I pour water in a bucket, it's the scientific method in action!' This suggests a level of inherency, and perhaps

once a scientist, always a scientist. As such this aspect is explored further throughout this section and chapter, with many short comments focussing on this aspect. Although respondent discourse on this area of the scientific method and being the scientist is insightful for the self-identification of the scientist, it is an area that most of the respondents felt ill at ease with and in the interviews, was treated with caution. I am left to speculate that the difficulty in this area is based in a rigid position taken by the respondents that the scientific method is a definitive aspect of reality, existing in its own right, and independent of the respondents, while at the same time, no respondent is capable of meaningfully engaging with what it might be. An SME buying-selling manager (respondent number 2) demonstrates this by emotively stating:

> 'There is all this BS that science isn't the way, isn't the way forward [Voice volume increasing] and its all fucking nonsense. Do gooders, none of them scientists, none with, ummm, the, the right stuff! People say the moon landing didn't take place! Rubbish, absolute rubbish! People challenge the scientific method. You don't look up at the sky at night and say, I don't, mmmm think there's a moon! You don't do you! It is what it is, and the scientific method is the same! It's real, and is what it is. It exists and is the way. Why ask? Why describe? It is what it is!'

The notion of the scientific method as potentially having a physical presence, and being described as real, is something that cropped up several times throughout different respondent discourses. Although potentially important for being a vehicle for legitimising the respondents, I allowed the discourse to move beyond this area, and tried to readdress this aspect when the respondents were calmer.

Looking at the academic background of the respondents all identified as having a background in science, with scientific knowledge being derived from academia and professionally through employment. Only two of the respondents (SME CEO – respondent number 1 and SME MD – respondent number 4) identified as attaining business knowledge in academia, through MBA degrees. Both of these respondents stated that their organisational position makes it important to create

a perception that they are experts in business, and thus they undertook MBA degrees. Critically, although the respondents are keen to be perceived as scientific experts, they also argue that they are experts in business practice. Thus the belief is promoted that the MBA degrees facilitate the CEO's and MD's current organisational positions and legitimise their senior management positions. This view is supported by the statement from the SME CEO (respondent number 4) of, 'yeah…I did an MBA, had to! Simply had to, no practical use of course as I was already CEO, but I need to be seen as a manager! I used to be a scientist, but that is too hands on, too trade, erm…one needs to be seen as a cut above that'. In this case, the CEO argues that he has changed his organisational role identity and perception by having an MBA. This is a stance similar to that stated by the MD, who comments, 'You do an MBA to show you have money, status! Ok, so I learnt a bit of business too. But business is easy, especially the theory, not like science. I need two hats though, to show the world I can do science and business and the MBA showed that I was ummm…acting as an effective managing director'. What is perhaps most interesting is the MD's view that having an MBA creates a perception that he is an 'effective manager'. Exploring this further, the MD and CEO both express that although science is the most important legitimising background to have, before achieving their MBA degrees, they were labelled as 'just a scientist' and 'playing at being a manager' respectively. After achieving their MBA degrees, the MBA led to new claims used by both respondents with the term 'MBA' frequently being linked with the notion of 'effectiveness' and being 'the manager'. Importantly, these comments suggest an MBA does not create 'a' manager, but 'the' manager, which is a more powerful and authoritarian position. The aspect of having an MBA degree is discussed in more detail in sections 4.1.3 and 4.1.5.

Other SME respondents appear to treat their self-identity as anything other than a scientist with caution. This can be linked to the fear of stigmatisation from other scientists and from themselves, where any move to being a non-scientist could be considered a drop in status. As SME CTO (respondent number 6) commented, 'If I'm no longer a scientist I won't be able to respect me, my friends, former colleagues and family will look down on me'. Thus, maintaining an element of being the scientist is a means to avoid stigmatisation, where being a quasi-

scientist is a means to maintain a perceived elevated status, while rejecting negative perceptions from being in business as a seller or buyer. Importantly though, there is a practical acknowledgement that for example a buyer/seller is employed and functions as a buyer/seller, and that science isn't 'being done' in a traditional sense of being in a laboratory, but that it is through being a scientist that these organisational roles are enabled. An SME CTO (respondent number 3) comments on this by saying, 'Yes, yes yes, I do work as a seller/buyer. [Laughs] but it's being a scientist that allows me to do this'. Thus, it appears that being a scientist is pivotal to being able to buy and sell, which is explored in greater detail throughout three 'Findings and Analysis' chapters. While having looked at the promoted need to be a scientist, the identity of a non-scientist in a selling and buying environment is also considered. This highlights a staunch view by the respondents that non-scientists should not be allowed to buy and sell technical and scientific products. Importantly, the SME MD and SME CEO (respondent number 1 and 4 respectively) both argue that while it is possible and even desirable in some cases, such as with low-technology products, for non-scientist marketers to buy and sell, they will lose credibility in front of other scientists if they are perceived to publically validate this practice. Both of these respondents claim that their MBA experience while studying for their degrees has 'flavoured their views beyond science' to a more expansive and open view to different academic and business disciplines. These two respondents promote themselves as business professionals, while still claiming to be scientists, or more explicitly 'scientist managers'. The theme of being the scientist business professional is considered more in this chapter, in Section 4.1.5.

Being a non-scientist is frequently discussed by all respondents, with concern that to be perceived as such could erode a right to speak and would reduce their ability to 'provide the truth of the situation'. The term 'non-scientist' through short claims is frequently used by respondents and often in a dismissive way to negate the view from an individual using undesirable and conflicting discourse. Similarly, to MBAs being linked to effectiveness, 'non-scientist' is linked to 'stupidity', 'otherness' and a 'lack of knowledge'. This is shown by an MNE buyer (respondent number 12) who states that, 'Non-scientists, I have no time for them y'know? They know nothing. Always disagreeing with what we scientists

say! As a scientist we need to protect our view of the world. It's pivotal for what we do. Can't be challenged. Not even by other scientists.' Thus, it appears that respondent discourse is a vehicle of promoting and controlling role identity as a vehicle of legitimacy. This is followed by the further comment by the same respondent, who describes how he delegitimises any conflicting discourse from another scientist, 'Let's imagine another scientist says something and we are in competition with them. Easy to deal with, it's very easy. We say they aren't a scientist! Not a real scientist. Claim they a non-scientist, made up qualifications. It might not be pleasant but it's how we do what we do, we can't have anyone challenging what we do and say'. Simply put, not being a scientist is an insult to delegitimise other individuals and is used to erode the stance of scientists into non-scientists, as well as more generally against other individuals in business. Perhaps not surprisingly, and detailed in Appendix G, these aspects are all described through a high-level use of repertoires focussing on these areas.

Although all respondents identify primarily as scientists, whereby other identities are treated with caution, respondents also acknowledge their buying and selling roles, but with a preference for being perceived through comments as 'scientist sellers', 'scientist buyers' and 'scientist seller-buyers'. This is opposed to being sellers and buyers who are scientists. As an MNE buyer states (respondent number 13) 'I might be a buyer, but I'm still a scientist, a scientist buyer, and that's what's important'. Importantly, each respondent claims that they have undergone training in business in their organisations, and in most cases have functioned for greater periods as sellers and buyers than as scientists. The following comment from one MNE buyer (respondent number 11) reflects many of the sentiments from the respondents, 'I'm a scientist who sells, yes I'm a seller, but I'm a scientist who sells! I'm not one of those one of those business sellers! They have no clue about the products. Thank God in this company we have to have a, ummm, techie background to sell!' This statement highlights a discursive theme running throughout many of the interviews, and suggests a belief structure held by respondents (although arguably less with the SME CEO and MD, with them having MBAs), of science as being 'the route to knowledge and as truth', and is highlighted in Appendix G, with a high frequency of use of such comments. A greater examination of this aspect is shown in Section 4.1.2.

Another issue arising from the prior respondent statement is the need to have an understanding of the science underlying the products. This not only relates to the products being technically orientated, in that all respondents state they sell and/or buy nanotechnology products, but that understanding the products is vital, as is the promotional aspect of having this knowledge.

Importantly, and although respondents self-identify as scientists, they also promote their ability to use science to aid them in their current roles. An example of this is highlighted from an SME CTO (respondent number 6), who states:

> 'I see the world as a scientist, ummm, yes, this, and this helps me see it as it is. When I make a decision, or talk to a client, we both communicate about the world as it is. We know the world, and science lets us do this. No ambiguity! No confusion! Stick me with a non-scientist, and we have what I say which, which is erm, true, and, and what they say, which is not. They aren't lying, just don't know how to speak properly [Laughs]'.

This aspect appears numerous times throughout the discourse, with a greater consideration being shown in section 4.1.4. The promotion of science as truth is a common theme throughout the interviews and is explored in the following section of only science is true.

4.1.2. Only Science is True

The theme of science being true, and 'as a vehicle to communicate truth and know truth' emerges from many of the interview responses, with all respondents showing a high frequency of comments for this aspect, as shown in Appendix G. Examining science as truth, an MNE seller (respondent number 8) states that 'Science is true! It is the only area that is! It doesn't lie! We all know that it can't, it just can't. We have integrity unlike other areas'. Simple yet powerful short comments of 'science is true' or 'science is truth' are frequently used throughout

many of the respondent discourses, giving a rapid discursive vehicle to legitimise any statement given, as being beyond doubt.

Suggestions that science is not capable of falsehood is an important aspect, and is shown by an SME CFO, ‘Science doesn’t lie. Why would it need to? Everyone knows it’. The comment by this respondent highlights the perceived ‘realness’ of science potentially functioning beyond a composite of human actors who speak for it, where it has the capability to speak for itself. Practically, science cannot speak for itself, as discourse is practiced through individuals positioning themselves as the ‘mouth piece’ of science. The act of speaking for science can be taken as a way for individuals to legitimise themselves, as demonstrated by an MNE seller stating, ‘Only scientists like me can speak for science, only scientists are valid in what they say’. In other words, an individual can achieve the status of a valid communication source as the ‘scientist’ by speaking for science, which is explored in greater depth in section 4.1.3.

Digging deeper into why the respondents argue a need for the discipline of ‘science’ to have them speak ‘for’ it can be related to a perceived right to speak about science. The thoughts of an MNE seller (respondent number 10) state that ‘the last thing anyone needs is different views about science, it confuses our ability to sell, as, as, as nobody knows what to believe’ can be linked to earlier respondents’ views that there is only one truth in science, and where science is always true. Expanding on this aspect further, it raises the notion of whether science and the sale of scientific products are thus truth-related, or whether as indicated by the previous respondent, it is more about conformity in communicated discourse. Although all respondents argue that ‘science is true and has only one view’, further respondent discourse indicates that it is their view of science as true that is important. This is expanded on by the prior respondent (MNE seller - number 10) claiming that ‘scientific truth is what…whatever I say it, it is. It’s my voice that counts, and the truth [Raised voice] is whatever I say it is!’ Thus the claim of science as being truthful must be taken with caution, as truth appears to be whatever the respondents promote. Other respondents voice similar notions about scientific truth in that they are to be decided by themselves. Likewise, the concept of objectivity can also be determined by the individual

speaking, as argued by the SME MD (respondent number 4), 'Fuck it, we say science is objective, claim our right to fucking speak, but y'know, at the end of the day, we decide what is objective. Never publically though. Officially it's all objective. Let everyone believe that'. A difference can be drawn between what is spoken about inside and outside the company, with the SME MD also claiming not to use such comments outside of the company. The objectivity of the individual as a communication channel is stated as pivotal for legitimising the speech used by respondents, as argued by a SME CFO (respondent number 5), 'They need to see me as legit, objective, not impartial exactly, but, hmmm, objective as a vehicle to truth 'bout the material world. Do I believe I am? No, course not, but they just need to believe it'. As explored throughout the study, 'they' typically refers to colleagues or individuals engaging with sales or buying. This aspect pushes into marketing communication, which is given more consideration in the following chapter.

The truth status and objectivity of science and the respondents as communicators of truth is often contradictory, with respondents repeatedly contradicting themselves. An example is shown from an SME buying/selling manager (respondent number 7) arguing that science is the 'truth and the way to the truth' while minutes later stating 'Of course science is deceptive, we tell you, you, what, arrr, we want you to know'. The challenge becomes how to reconcile these differences, but with little discourse in this study to support how this might be achieved. It is worth considering that there is perhaps little need for these respondents to discursively bridge the conflict, as if unchallenged, discursive claims can be selected and used at will to legitimise their position. Drawing on discourse from an SME CTO (respondent number 3):

> '[Lowers voice] Look, look, it's not easy. You get told all the way through uni, working in a lab that science is objective, is truth. It's the way we say it. I say it without thinking "Science is objective!" Argue with me and I'll shout it at you. It's a built, in, built in response. I don't always believe it. It's useful for speaking, speak, speaking to non-scientists. They love it, gives em faith in us. Scientists don't say it, or if we do, who challenges it?'

All respondents demonstrate the prevalence of this theme, and Table 4.3 shows respondent discourses for science as objective and true.

Respondent ID	Science as Objective	Science as Truth
1. SME CEO	'Science is objective and I say it, no matter what I believe!'	'When I speak about science, its all true, none of your business speak here'.
2. SME Buying/Selling Manager	'Its objective as much as anything else. But people want to believe us. Companies want to believe'.	'Science is the truth and the way to the truth' and 'Of course science is deceptive, we tell you, what we want you to know'
3. SME CTO	'You get told in uni, science is truth. I always say it. I don't always believe it. Non-scientists love it, gives em faith in us'	'Products need to be seen as what we say they are! We are like priests. People think we can't lie. Perfect! We sell more! Other scientists know, but managers don't '
4. SME MD	'We say science is objective, claim our right to speak, but we decide what is objective'.	'No more or less true than anything else. Like the X-Files, "I want to believe". We let customers believe science is truth'.
5. SME CFO	'They need to see me as legit, objective. Do I believe I am? No!'	'The claims we make are supported by stats and on this basis are true'.
6. SME CTO	'Yeah, science is objective [Laughs]'.	'Every word is true. No scientist lies [Laughs]'.
7. SME Buying/Selling Manager	'Is anything really objective? Yes? No? Its all about what you say it is'.	'It pays to promote what we do as legitimate. So the methods we use and way we describe it is more argued as truthful'.
8. MNE Seller	'The last thing anyone needs is different views about science, it confuses our ability to sell'.	'Scientific truth is what…whatever I say it, it is. Its my voice that counts, and the truth is whatever I say it is!'
9. MNE Seller	'Anyone not being, believing, that science is objective is an idiot!'	'Science is true! It is the only area that is! It doesn't lie!'
10. MNE Seller	'Oh yes! All very objective. Fortunately few people work in science and know the truth'.	'We need to be seen as truthful. Science isn't. We aren't. But we tell our customers we are. Only, tech guys get the game'.
11. MNE Buyer	'It is objective! You should know this, you are a scientist!'	'It's the language of science that makes it true. None of your post-mod crap here!'
12. MNE Buyer	'We like to talk about validation and verification. I want objective evidence of what you say'.	'Working in science reduces ambiguity and it enables us to know and make decisions.'
13. MNE Buyer	'As an objective discipline, this makes us have faith in products'.	'I worry that the sellers aren't truthful!'

Table 4.3. Respondent constructions of science as objective and true.

Looking at Table 4.3, a range of respondent constructions of science as objective and a vehicle to truth is demonstrated alongside it as a promotional tool to create security in the buying-selling relationship, and in the wider buying or selling organisation. For example the SME CTO (respondent number 6) highlights that individuals less versed in science might be less capable of discerning between the claims made by his company as a marketing activity or as trustful and objective. Thus it appears that claims of objectivity and truth are potentially used in the sales environment to influence other buyers or sellers, and can be regarded as a marketing tool. More specifically, an example is given by the SME MD (respondent number 4) 'we tell them it is true, and the results are objective, is this true? Is this objective? No, absolutely not!' This clearly shows deception on the part of the respondent and this aspect is examined further in Chapter 5, Section 5.1.3.

Coupled with the concept of science being promoted as objective and truthful is a need to understand the reasoning behind why these respondents would make these claims. As already discussed in this section, this relates in part to the promotion of these concepts for perceived business advantage, which is discussed in Chapter 5. Moving beyond this aspect though, is the notion of a right to speak about science as something that exists outside of social structures and is reified, perhaps similar to the way that physical reality might be regarded. This is a challenging area to explore but appears important for understanding the lens that some of the respondents use to view science as a phenomenon capable of existing outside of the social world and as a system independent of humans. Discourse relating to this area highlights the promotion by respondents that science has its own independent existence, by the statement from an SME CFO (respondent number 3), 'science isn't just objective, it exists, it's independent of everything we say about it'. This raises a potentially difficult question to answer about what this means for how science is being constructed and marketed, although arguably and from some of the respondents' views it is not constructed as it exists independently from discourse. In other words, for this respondent, science is not socially constructed, rather it 'exists'. Further comments by the SME CFO brings clarification, 'It's the only real thing, it's what gives us a right to speak as scientists about what is real…erm, am. Look at it this way, this is

why, why all scientists say the same things, it's like science speaks through us!' This notion that science 'speaks through scientists' is something that appears on numerous occasions, and drawing on an MNE buyer (respondent number 12) who states 'I just know what to say, I have these sequences of words that jump…jump out, out of, my mouth. So someone says to me, what's DNA. Without even thinking I say, its deoxyribonucleic acid, four bases, two base pairs, adenine, thymine, cytosine and guanine. I just say it without even thinking about it. Spooky!' It appears that the availability of 'unconscious' claims is linked to science existing outside of social structures, albeit being communicated through them. There is also the intriguing juxtaposition by the MNE buyer who claims that his discourse regarding the constituents of DNA is 'Spooky!' It is unknown at what level this exclamation is to support science as having a supernatural existence, or at least a physical or other existence outside of humans. This is coupled with how respondent scientists undertaken positioning as archetypal 'good guys', 'super heroes' or 'übermensch' who tell the truth, as the SME MD (respondent number 4) demonstrates, 'as scientists we have a mission to bring truth to the world'. Again the truthful nature of the respondents must be considered against their own discourse where they openly promote themselves as deceitful. Claims used to promote the truthful nature of discourses, are much more lucid through emphasised intonations, in comparison to less emphasised claims for deceitful discourses.

Drawing this section to a close, various themes are highlighted, including how the label of a scientist is used to enhance an individual's right to speak and know about the physical world. Alternatively, eroding the position of an individual as a scientist is a powerful way to delegitimise another's discourse and empower the individual driving the erosive process. Legitimacy to speak is also demonstrated as critical for scientists in this study, and through arguing the supremacy of science above all other disciplines, it is argued as the most powerful communication tool. More than this though, science is described as reified and beyond and outside of social structures as something true and objective. However, claims of truth and objectivity are constructed as being to promote the validity of science and the speaker, and can be changed to suit the marketing need of the respondent, which is discussed in Chapter 5. Importantly, many of

these aspects are power-based, and as such the following section goes on to explore the power of science.

4.1.3. The Power of Science

The relationship between science and power is a much-discussed aspect throughout the interviews. In particular, several themes are shown with example discourses highlighted in Table 4.4.

Theme	Respondent ID	Utterance
The power of science	8. MNE Seller	'Science is, is, the ultimate expression of knowledge'.
The power of a scientist	9. MNE Seller	'I know the physical world, and can know, everything about it…that gives me power!'
Controlling discourse	2. SME Buying/Selling Manager	'Of course I'm in charge of what is said. It depends though. I speak to a scientist, and its mutual respect. A business man, I'm in control of what we say'.
Knowledge as power	13. MNE Buyer	'What I don't get is this what I say is accurate, precise, I know the world as I know the words of the physical world. So why does no one respect my knowledge and respect me!'
The right to speak	3. SME CFO	'Only scientist can speak about science! Everyone yatters about science, and they shouldn't!'
Scientist vs. scientist	1. SME CEO	'I'm a chemist and I speak to other chemists, with no issue providing we agree otherwise I rubbish them!'
Scientist vs. non-scientist	7. SME Buying/Selling Manager	'It's like speaking to children. No clue, no sodding clue about the world. Keep it simple, clear, use the right words for what we are talking about'.
Control over what constitutes science	12. MNE Buyer	'This really fucks me off! And I mean really fucks me off! Some fucking sociologist, or worse than that sports scientist telling me what science is. How fucking dare they?'
Control over who is a scientist	3. SME CTO	'You piss me off and you aren't a scientist. Contradict me, you aren't a scientist'.

Table 4.4. Science related power themes and discourses.

The themes shown in Table 4.4 appear throughout numerous respondent discourses, and perhaps due to the order of questions used, the first aspect of power arising is that of science. Throughout the interviews, science is promoted and argued as an entity that subsumes all in its capability to know the world and act as a super category, with a high number of repertoires for this aspect being shown in Appendix G. In other words, respondents frequently argue that 'science is at the top of academic and business disciplines'. This is highlighted by an SME CTO (respondent number 5), commenting that, 'Science is at the top of the tree, in biz and in academia. It just is. Do I believe it? Hell yes!' The SME CTO is not the only respondent to make such a statement, as it is prevalent throughout all respondent discourses, often using simple statements, which are not to be challenged. This is coupled with what an MNE seller (respondent number 8) states, 'ummm we are a science company, so of course we say science is the best and only way'. A distinction is however made between both the SME CEO and SME MD, who view science similarly and the other respondents. Commenting on this, the SME CEO (respondent number 4) states that 'Yes science is the most important, but it's just promoted as such' and 'We market science this way, as the big boy! Just giving the people what they already believe, but this is just marketing'. Thus a divide is visible between the SME CEO, SME MD and all other respondents, where the former two respondents construct science as important for marketing purposes, and the other respondents who argue science as 'fact'. It is worth considering that both the SME CEO and SME MD have been exposed to different discourse in their MBAs, leading to their perception of these discourses as beneficial for adoption.

The use of different discourses are based on numerous aspects including the way to approach a problem, and whether to view an organisational difficulty through the lens of a scientist, manager, or whether to cycle between both. The SME CEO comments on this saying 'studying two things is good but bad! Know what I mean? Which way to view a problem? It's one or the other, as me the scientist or manager, or both? All have good and bad points, situation drives it, puts me in the driving seat, hmmm'. This suggests an integrative challenge for this manager for which lens and set of discourses to view and describe the world. With a choice of different lenses and discourses, it suggests that this respondent felt he

could select a more favourable role identity, as either that of a scientist and manager or scientist-manager. The SME MD also cites similar challenges, but seems to prefer cycling between discourses to promote a role identity as a scientist or a manager. This is shown by the SME MD saying 'I want to show I'm a scientist, I say yap yap yap atomic bond, covalent bond etc. I want to mmm show I'm a manager, I say action this, action that, where's my spread sheet showing the ROI?' The SME CEO and SME MD make no further comments about whether others also had similar challenges.

Looking further at the respondents with MBA qualifications, the SME MD states, 'My MBA did change me. Wait! Look, to be honest it more changed the way, the way, hmmm, people saw me than me. But! But, it did change my outlook. The MBA is King, people respect it right? So, so, I use multiple ways of seeing this, I mean things. I, ammm, I pick and choose and whatever works is right'. This is an important aspect, and shows competing master narratives between disciplines and respective qualifications, both of which are potentially power-laden. This aspect is explored in more detail in section '4.1.5 The Science/Business Divide'.

For science to have power, it must have individuals who construct it as such. As one SME buyer/seller (respondent number 7) states 'the duty of every scientist is to promote science, and the cause of science'. The basis for respondents power arguably stems from their knowledge of the world as a scientist, and as one MNE seller (respondent number 9) comments 'As a scientist I know the physical world, and can know, everything about it…that gives me power!' The notion of knowing the physical world is a discursive theme frequently explored by respondents, whereby this constructed knowledge enables the empowerment of individuals. More simply, through respondents' continually positioning their self-identities as scientists enables them to assert the supremacy of science as an empowering act for discourses used. As mentioned previously, the ability of individuals to use technical terminology is a simple discursive tool to demonstrate knowledge of the world, with the potential to increase or decrease technical content as desired. Drawing on an MNE buyer comment (respondent number 11), 'The way I say it is right, techie language, it's the way that enables us all to know the world'. Importantly in this case, the use of technical language

enables (according to the respondent) others to know the world by his use of such terms. This aspect is explored further in Chapter 6, section 6.3.

Religious and spiritual terminology are utilised to construct respondent identities as scientists and for the power they can wield, as what might be considered a new class of religious leaders. Multiple statements such as 'I know the world and can manipulate it like a God', 'the world is here to be manipulated' and 'with this knowledge we should be revered by any layman', indicates an attempt by the respondent for self-positioning as a higher 'other', with overtones of religiosity. Even though much respondent discourse focuses on a perceived right for respect and reverence, this is coupled with a lack of perceived respect as an MNE buyer (respondent number 12) states, 'What I don't get is this what I say is accurate, precise, I know the world as I know the words of the physical world, what makes it tick. So why does no one respect my knowledge and respect me!' The 'no one' in the previous statement appears to be a general criticism of all others, including scientists and non-scientists, but particularly orientated towards non-scientists who are viewed as needing to show more respect.

Having knowledge of the physical world and describing it using scientific terms is repeatedly claimed as a reason to be viewed by respondents in an elite position within and outside of their organisations. As an SME buyer/seller (respondent number 2) suggests 'Y'know, we are, ammm, a science company, we do science! I'm a scientist, and my voice is the most important'. Although there is a propensity by the respondents to argue a right to be viewed as an authority, many instances are described where respondents feel undermined and in a position subordinated to higher management. The SME CFO (respondent number 3) mentions this saying 'At some level, yes, at some level they respect what I say about the science, my science speak and decisions I make, hmmm they have their world, the bosses, and use their biz-niss speak to knock me down'. This indicates a separation of social spaces in which the SME CFO and other managers exist as well as a criticism of business discourse as 'biz-niss speak', with the intonation suggesting it as inferior to 'science speak'.

Respondents frequently promote their language as scientific, and as such, having a higher status than all other types of language (particularly common and business). According to an SME seller/buyer (respondent number 2) 'there is only science and non-science language! Science language is right! Anything else is wrong!' This blunt view is potentially critical for the construction of a legitimate role identity as a scientist with respondents showing awareness that they are doing this. An MNE buyer (respondent number 11) demonstrates this with the following statement:

> 'Look [Laughs] we say science language is right for a reason. It lets us shut up anyone who disagrees. Do you understand how important, ummm, this is in my company. Can't let the biz, business guys have too much power. Keeps em in check. It's my choice, if I, I want to communicate I'll use everyday language, if not, its science all the way baby!'

The ability to have legitimised language appears important, with a variety of reasons for why this might be the case. The SME CEO (respondent number 1) for instance argues 'for me, science language is to legitimise myself with other scientists, and those who, hmmm, ummm, ah yes that's it, want to know that I know my stuff'. An SME buyer/seller (respondent number 7) states that 'Science jargon enables me to act with more authority, no one can question me'. It appears that authority is also a vehicle to be deceptive where it is perceived as beneficial. Finally, an MNE seller (respondent number 10) makes the comment 'it's all about being understood, use it with other scientists otherwise who understands you? Yeah, I can use it to elevate my status, but I don't need to'. More specifically though, the ability to increase or decrease the use of technical terminology is claimed as critical for controlling discourse and enabling a seller or buyer to meaningfully engage or not with a respective seller or buyer.

Much is made by respondents of their ability to construct competitors as unscientific. In particular, where an individual or organisation is viewed as problematic to the role identity of a respondent as a scientist, a 'competitor' scientist or science-based organisation can be denounced as not being a real

scientist or unscientific respectively. An example of this is from the SME MD (respondent number 4), who says 'We have a lot of competition, competing ideas, everyone yapping there is a different way to do something. Different product, different price etcetera etcetera. We need, need to, ummm, deal with it! So I just say, "Yeah I see why they say that but they aren't really a scientist! I'm a scientist, so believe me"! A similar strategy is cited by a SME seller (respondent number 8) who says, 'Someone selling on my patch, tell everyone they know fuck all about science. They are a failed scientist. Let me tell you, it scares the shit out of higher management buyers. Terrified I tell you, terrified of buying bad science'. This aspect is examined in more depth in Chapter 5, Section 5.1.2, for the way that other individuals and companies in the selling-buying relationship react to this aspect, as well as how competitors interact with such discourses. With a potential vehicle to 'damage' competitor identities, it can be questioned what impact, if any, it has on a competitor, as well as how this is achieved? Again this is explored in Chapter 5, Section 5.1.2. More than this though, the question can be asked, how do individuals engaging in these activities construct themselves as scientists? The first route is through the use of technical terms, and as an SME buyer/seller (respondent number 2) states 'whatever the area being discussed in sales, I keep dropping in relevant techie words. Bio this, bio that, DNA, ermmm, protein, transposon, it sounds great and legitimises me'. This style of discourse does (albeit not directly) receive criticism from an MNE buyer (respondent number 11) who argues 'some of these sellers are ridiculous! I know they know the science, I really, really, really don't need them to keep dropping in technical terms! Just does my head in!' The criticism for carrying this out is argued as being 'too marketing orientated' as while such practices are constructed as a vehicle to legitimise; too much promotion should not be required (see also Chapter 5, Section 5.1.3). The use of technical words as a way of legitimising discourse and identity appears to happen quite rarely in established relationships between individuals who self-identify as scientists. As an SME CTO (respondent number 6) comments 'Once a relationship is established, we can relax. We are both scientists, and all the pre-game mumbo jumbo techie talk can go, we can just talk'. This is different to the process of establishing relationships where it appears that a fine line is to be walked between discourse as a legitimising vehicle, which is desirable, and one that

promotes role identity too strongly and erodes the ability to make sense of products. Commenting on this further, an SME CTO states:

> 'You know you need to ummm, show you are a scientist and know what you are doing, but do it too much and I'll think you don't know what, what you are talking about. Mmmm that makes little sense. Ok what I meant was, we use techie terms to confirm, when establishing a relationship, but not too much as it delegitimises, and no one understands what I'm saying'.

It appears that the respondent and others are trying to convey an appropriateness of the use of technical terms, which should be culturally understood, and leads on to aspects such as being an insider or outsider, or more bluntly someone in the know.

The second route respondents used includes constructing themselves as scientists through the frequent use of perceived legitimising comments including, 'as a scientist', 'with being a scientist', and 'as all scientists know'. These claims range from respondents stating they are scientists, which are linked to speaking to perceived non-scientists all the way through to 'as all scientists know', which is used to 'create closeness to another scientist'. There is thus the suggestion of science being constructed as a repository of hidden knowledge from the layperson and accessed through being a scientist. This view aids the argument by the SME CTO (respondent number 6) of 'Knowing science means you can't be challenged, own language, no outsiders allowed inside'. The use of repertoires towards this end are shown in Appendix G, with a high value being placed on their use by respondents.

Finally, much criticism is made towards academic scientists, potentially perceived as being able to produce counter narrative/storiess and be a threat against the legitimacy of the respondents. If the subject of scientists in academia is raised, the respondents routinely refer to them as 'academic scientists' in a dismissive way. Power is an important issue in this context for who has the greatest right to speak and the ability to erode the communication channel of

another speaker. While discussing academic scientists, respondents often sought to create a contrast between themselves as 'industrial scientists' emphasising industrial and 'academic scientists', emphasising academic. Like with competitor scientists from within an industrial arena, academic scientists are also criticised for not being 'real scientists' who 'play at the tax payers expense'. Much discourse constructs academics as 'irrelevant', 'not fit for purpose', 'damaging commercialisation', and 'getting in the way of progress'. Although broad claims are made to criticise academics, particularly for their powerful discourses, the crux of respondent arguments focuses on anyone or anything that might hinder the legitimacy of their position or commercial activities. Thus, academics are a potential source of conflicting counter narratives/stories. While respondent discourses from MNEs focus on delegitimisation through competitors having a low level of knowledge about science, SME respondents predominantly criticise academic scientists for having 'no grasp of business'. This is argued by the SME MD (respondent number 4) as being a 'consequence of having dealt with academics! Larger companies can protect themselves, but…we can't'. It appeared that academics are not viewed in isolation from their universities, with universities being viewed as similar to aggressive corporations. The SME MD highlights this by arguing 'universities are protected by government! Vast organisations! Huge sums of money and they target our clients, give em free work! All paid for by the taxpayer!' For all respondents who voiced such concerns, the aim of this criticism appears to be to destabilise universities and academics as competitors. These tactics are predominantly persuasive in nature, which is explored in the following section.

Summing up this section, various themes have been drawn out and considered within the power of science. Coupled with arguments of science being a super category that sits at the top of all disciplines, and as a way to know and speak about the world, respondent identification as a scientist gave a vehicle to increase social and organisational standing, while eroding competitors. With much of the activities of the respondents being discourse-laden, it is perhaps not surprising that competitors are not just perceived as different buyers or sellers, but anyone who can produce a counter narrative/story to a preferred worldview. Academics are particularly targeted for respondent criticism, as universities are perceived as

vehicles to create esteem and legitimise academic discourse, which is inaccessible to the respondents. Thus, academics and other competitors are subjected to discursive claims to reduce their legitimacy and right to speak about science, particularly science in a business context. Finally, the language used by respondents is used as a gating mechanism to welcome or block other individuals as insiders or outsiders. Importantly all of these aspects are facilitated by the ability of a respondent to persuade others in and outside of their organisations of the rightness of their argument. Thus the next following section examines the persuasiveness of science.

4.1.4. The Persuasiveness of Science

The use of persuasion within science is a much contested and debated area (Luks, 1999) and is a device respondents frequently use to promote their views, identities and status amongst other aspects. Many of the claims of truth, knowledge and arguments are communicated through persuasion with examples being shown in Table 4.5. These examples often vary, and draw on many different aspects to promote and persuade author discourses, but yet all have science as a critical foundation to legitimise and persuade. Using science to persuade predominantly takes science as a foundation of untainted truth, where scientists as ‘priests’ can speak in a ‘religious’ way, where they cannot be challenged. Looking at Table 4.5 and the SME CFO (respondent number 5), the claim is made that by buying a product from their company is buying ‘science’. It can thus be taken that the sale of science is a potentially powerful and also useful tool, perhaps suggesting other aspects including rigour and robustness, which are discussed in numerous other parts of this chapter.

Respondent ID	Persuasion
1. SME CEO	'Companies looking for scientific solutions to problems buy nano!'
2. SME Buying/Selling Manager	'Our products are true, the words we say reflects the truth of the products'.
3. SME CTO	'These products are based in knowledge, knowledge of the world, of science. This knowledge lets us sell you what you need!'
4. SME MD	'Scientists make products, do you want to buy a science product from a scientist or a non-scientist? Let me answer… a scientist!'
5. SME CFO	'Science makes us legit, it promotes us, and what we do. Everything we do is science, you are buying science!'
6. SME CTO	'Technology is what you need, it is what your products need, you are begging for nano'.
7. SME Buying/Selling Manager	'Sales is about truth! And science is truth! So we sell truth. I'm the source of truth!'
8. MNE Seller	'I need to persuade you to buy…and y'know, rhetoric works'.
9. MNE Seller	'Nano cures what ails ya'.
10. MNE Seller	'Our sales are more precise, as, as we know the physical world, it means we can know you better too!'
11. MNE Buyer	'Too much rhetoric in sales, but not as much as outside of it!'
12. MNE Buyer	'Have faith in science, it will save you'.
13. MNE Buyer	'Science is the legitimiser, I use it to persuade, get my own way. I'm a scientist, and this is all I need to say'.

Table 4.5. Respondent persuasion.

The comments in Table 4.5 show a propensity for respondents to promote truth and knowledge aspects of the sales relationship, as well as arguing their right to be perceived as an authority. These and other aspects are considered more fully throughout this section.

Looking first at respondent uses of persuasion to promote the truth-value of their discourse, there is a noted difference in the use of this vehicle depending on which other individuals are engaged with. While persuasion is argued by respondents as being capable of promoting their agendas to persuade others of the truth of their statements, the receiving parties' perceived scientific knowledge is pivotal for the language that respondents use. For example, in close sales relationships the use of persuasion is subtle, and as an MNE seller (respondent number 9) describes it: 'I have to be careful! I mean…I want to persuade, but a

good scientist will see them as blatantly manipulated claims. So its gentle persuasion…Like…We both know this works'. Alternatively, as the same respondent states, 'If I'm selling to someone with little science knowledge, ummm, well I can get away with more to convince them of the truth of what I'm saying. So! Let me see! Ah, yes, here we go! As a scientist you can trust me, as the pH is what does it'. The SME CTO (respondent number 6) mentions that in similar situations he will 'throw a lot of techie words, but do it confidently…you know, well [Waves hand in the air] nanoparticle A joins to nanoparticle B and we have your product, salt reduces cost, the salt makes it work better, salt I meant NaOH! At this point they believe me'. Importantly, while the respondent moves to discursively use scientific terminology for salt, the use of NaOH for salt is in fact incorrect. The importance of obfuscation is also argued for potentially generating sales, as discussed in Chapter 5, Section 5.1.5. The use of technical language to assert the perceived truth of a product is a theme that frequently occurs. However, the same respondent also argues that the use of technical language is not necessarily required, when he says, 'when another scientist knows what I'm talking about, although if I meet a scientist who has no idea, what I'm going on about, I'd hit him with techie terms, show him I'm right'. Thus communication must reflect the audience it is intended for, where canned material can be viewed as an unhelpful tool. The use of technical terms appears to be limited to scientific terms, unless an academic is encountered, and as an MNE seller (respondent number 12) comments, 'I meet an academic, can't respect them, fancy titles. Don't want to fight, but don't want to show um, them might know more. So I shift to persuading them though sales talk'. Shifts to using business terms is therefore important depending on the audience, and suggests the fluidity of discourse used by respondents to meet the needs of different audiences. Using this approach suggests that respondents are able to engage in persuasion to convince another party, while demonstrating their power, knowledge, and also communicating the 'truth'. It does however suggest that scientific terms are not the only terms for persuasion (see also Chapter 5, section 5.1.4).

Persuasion is also useful to promote respondent knowledge, inside and outside of their organisations, where the received knowledge by an audience is critical for

selling and buying. As an SME buyer (respondent number 11) states, 'Of course who I'm speaking to makes a difference. And his knowledge. Bit, but it depends! So, ermmm, I'm speaking to a guy in my company, well, it depends, but, I want to maintain my position, my power! But outside it depends again, in sales I want to get on well with the other guy!' Providing more detail on this, the same respondent comments that:

> 'I need to persuade everyone what I'ma, I'm doing is right. In my company I put a positive spin on everything, so it's about showing the positive, yak, yak, yak, thin-films are selling because what I say. So I'm left alone. But with buyers, well, well, it's about a softer way, so, so, I use supportive terms like, it's what you need, it's a long-term investment, you'll make your guys proud with this decision'.

Promoting a strong role identity and ability to use it is widely reported by all respondents for their organisational life and ability to buy and sell. Coupled with this aspect is the way that respondents discursively present underlying physical knowledge. Highlighting this aspect an SME CTO (respondent number 3) states that he has superior knowledge of 'the way the world works', 'tech products', and ultimately 'nobody knows the way a product works like a scientist. I even know the way your chair works!' Claims about understanding the underlying science of products is often used by respondents to justify their self-identities as knowledgeable scientists engaged in business. These appear to be powerful discursive claims where an ability to understand the 'physicality' of the world can be used to override any other type of knowledge.

The use of 'positive spin' within respondent organisations is viewed differently based on how the respondents position themselves, within their respective organisations. The SME CEO (respondent number 1) and SME MD (respondent number 4) argue the importance of their ability to implicitly convince other company members in positions of power, of their worth as sellers and buyers. The SME MD describes the importance being able to sell by saying 'Netting a new contract, ummm, its like bagging big game! Trophy hunting, everyone sees what I've done'. For respondents with 'lower' organisational positions of power,

they also identify a need to sell (apart from MNE buyers) as part of demonstrating their organisational value. As an SME buyer/seller (respondent number 2) states 'Everyone needs to see me sell, it keeps em convinced of me. Ok I tell people all the time what I'm doing, and how, how good I am. They need to see it too though. Keeps managers happy, colleagues in their place, and underlings from taking my job'. With not engaging in the act of selling, MNE buyers typically discuss buying and the relationship to their organisation, which is framed in 'meeting company needs' and 'saving money'.

Looking further at knowledge, the promotion of sales is framed through discursively orientated science-based arguments. This ranges from claims as being within an accepted view of science and those that cannot be justified, and highlight absurdity, which several respondents acknowledge. Taking claims argued as justified first, simple persuasive statements are made, as the SME CEO (respondent number 1) describes, 'this is known about these products scientifically' all the way through to 'slightly embellished claims'. Further examples by the same respondent also focus on simplicity, including, 'product x sits in line with ISO y' and 'we all know that this molecule is fit-for-purpose but gives you that something extra, that, razzle dazzle!' Such claims are argued as being most appropriate for individuals with a high-level of knowledge about the underlying product science and as an SME CFO (respondent number 5) states, 'I have to be careful with what I say, I say something too bold, and bang! It's a rod for my, for my own back! In a way, the more knowledge the other chappy has, the more careful I am'. Stepping beyond individuals perceived as having a high-level of product knowledge, respondents are keen to show their use of persuasion in both the sales environment and in their own organisations. As the MNE seller (respondent number 7) demonstrates, 'the less you know, the less you know, the bolder I can be! Doesn't matter where, where I work, where I sell, it's all the same! Let me give you, an example, give you an, ummm example! This product is awesome, it's absolutely what your company needs. Your manager will love you for buying this. It's got so much chemical A you wouldn't believe it!' This suggests an approach to selling based on the promotion of knowledge that is perhaps more promotionally orientated, as opposed to what might be considered scientific 'fact'.

The lower the perceived knowledge of a buyer or seller, the more product claims are stated as moving away from what could be scientifically validated. The SME CEO (respondent number 1) highlights this point:

> 'Let's say I'm selling to someone who has no clue what it is, I can say whatever I want. He won't understand the techie lang, language, so what difference does it make. I can tell him it's a mind blowing therapeutic, or something that fucks the shit out of cancer. He has no clue, I can say it extends life, he won't get any of it anyway. Well, ok, he gets extending life, but not how claims are verified!'

Extending this concept further, an SME buyer/seller (respondent number 2) states 'we might as well tell buyers they are building a warp drive for all the good telling a non-techie buyer what our products do'. A comparison can be however be made to sensegiving and sensemaking, where popular cultural references may well influence sense made, and is discussed throughout Chapter 6. Further comments made by the same respondent suggest that 'I don't want to lie about the products, but they just have no clue what it does or what anything I say means. So I guess I simplify, and if, telling, telling them means I say something stupid but its relatively right, that's what I do'. The relationship between products regarded as high technology, lower technology or as nanotechnology (potentially fitting into either classification) is more fully explored from a marketing communication perspective in chapter 5 in Section 5.1.3. The issue of moving away from scientifically validated product claims is criticised by respondent buyers who do not carry out selling activities. This is shown by an MNE buyer (respondent number 11) who states, 'why can't they just stick with what it does, confusing the issue with nonsense. Science persuades me, not their nonsensical claims! I know they are trying to convince me to buy!' How this relates to the selling and buying event is more thoroughly discussed in chapter 5, Section 5.1.3.

Throughout this section, the persuasiveness of science is explored, highlighting various aspects in particular the use of scientific terminology to influence others. Importantly, the use of scientifically laden language is demonstrated as both a

vehicle to promote legitimacy as well as deceptively construct discourse to persuade others in and outside of the respondent companies. However, and when desired, business laden language is also used to persuade, suggesting choices to be made on the part of respondents for how to actively engage with and influence others. After examining the use of persuasion and its links to science and aspects of the sales event, the next section moves on to look explicitly at the science/business divide where respondents within this study are arguably situated.

4.1.5. The Science/Business Divide

This chapter has so far discussed how respondents self identify as scientists to varying degrees. Perhaps not surprisingly the SME CEO (respondent number 1) and SME MD (respondent number 4) both see themselves as having a dual or hybrid role identity as a consequence of having studied science and business, alongside having held professional roles as a scientist and manager. Importantly, all respondents, including the SME CEO and SME MD, are employed in a business capacity, but predominantly identify as scientists who happen to be engaged in a business role. The constructed divide between science and business is thus explored in this section for the following areas including respondent role identity, perceptions of science and business, and how it relates to respondent organisational roles.

Each respondent is able to clearly identify their organisational position and for example as an MD, CTO or buyer etc. Even though demarcation points are clear, hybrid and multiple components relating to individual identities are visible, and as an SME CTO (respondent number 6) states ‘I’m employed as CTO, but I’m a scientist, being a scientist makes me a good CTO’. This promotes a view where respondents identify as scientists to a greater extent than their business roles potentially necessitate. Such discourse is common where respondents identify their business positions within their respective organisations, but also construct their abilities to carry out their roles, as they are scientists. An SME CTO demonstrates this by arguing that he is ‘employed’ as a CTO but ‘is a scientist’. This divide of having a job and being a scientist is prevalent throughout

respondent discourse, with the exception of the SME MD (respondent number 4) and SME CEO (respondent number 1). In the case of the SME MD and SME CEO, both respondents identify as being scientists, but also being managers, as both the SME MD and SME respectively state, 'yup, yes, I'm a scientist, but also a manager' and 'I dual function as a scientist manager'. While both respondents arguably show a preference for being scientists who manage, they appear to have a greater level of agency regarding their organisational position in comparison to other respondents. For example, the SME CEO and MD both argue their positions give them greater freedom in decision-making, with a high frequency of claims being used to highlight this stance. Looking at the other respondents, claims about their positions are framed more as something they are doing rather than being, which is shown by an MNE seller (respondent number 8) claiming, 'I'm a scientist see? A scientist who sells'. No claims are made to support the use of the scientific method or any other vehicle to 'be' a scientist, other than their perceptions that as having studied science and previously worked in a laboratory, they are still scientists. Importantly for all respondents other than the SME CEO and SME MD no mention is made of 'being' their organisational role as a primary or centralised role identity, and for example, being an 'MNE seller'. In each case, the role identity is positioned as a scientist who for example is working as an MNE seller. It appears that the greatest level of perceived legitimacy is derived from claiming to be a scientist, and as an MNE buyer argues, 'science is king, I'm a scientist, so why should I claim to be something lesser?' This view is supported by many of the respondents, in that science is a vehicle to organisational primacy.

Digging deeper into the way that the SME CEO and SME MD construct their identities as being scientists and managers, claims are made that it is advantageous to be able to be perceived as whichever role is the most fitting. For example, the SME CEO states, 'I used to work as a scientist. I still am, ummm, a scientist, and am now a manager as well. When I speak to scientists they need to know I'm one of them. The same goes for other managers. The MBA helps me demonstrate this'. This is a pivotal point, as looking back at what it takes to be a scientist; there is a requirement to study science and to work in a laboratory. However for the respondents with an MBA qualification, it is the ability to claim

to be a scientist who has an MBA that is important, as little consideration is given for practical management experience. As the SME MD states 'being a scientist means you can manage, it gives you the ummm skills. But the MBA legitimises in front of everyone'. For sales negotiations however, comments are made that 'I let em know I'm a scientist, but I don't want em to think I work in a lab today. I need more respect than that, so I drop it into the conversation that I have an MBA. I'm literally the best of both worlds! I want to show I'm a scientist I use techie speak, same for business, give em a taste of management speak. All legit!' The ability to switch between terms used in science and business is thus constructed as a way to promote and legitimise role identities, as well as drawing on having an MBA. Similarity is found with the SME MD who comments, 'I don't want to be seen as just a scientist. Scientists do what I say. I have my MBA and this makes me more valuable. As such I am a scientist and manager'. The ability to self-construct a role identity is thus important for the SME MD to promote himself as a scientist with increased knowledge, thus elevating himself above other scientists.

Although discourse from the SME CEO (respondent number 1) and SME MD (respondent number 4) suggests the importance of being able to be viewed as a scientist and manager, other respondents are critical of this aspect. There is much negativity towards gaining business knowledge from academic institutions. For example, a SME buyer/seller (respondent number 7) states, 'I think the funny question is…is…if I demand sellers and buyers to have been scientists, do we need [Finger movements] "business training" as well. Yes and no! Go to a university and learn from some academic who has worked in school, their…whole life. No! We need education that is fit-for-purpose!' This is coupled with a comment from the same respondent that 'an academic couldn't sell water to a man dying of thirst!' The described inability of academics to sell is linked to a further step by the respondents to erode any other undesirable communication channels including academics and non-scientists. This is an important aspect as while the respondents predominantly argue little value in business knowledge, they clearly show it can be useful when encountering others with a lower knowledge, highlighting how knowledge and identity is positioned against others. Where for example academics are claimed to be encountered,

business discourse and knowledge is relied on to delegitimise 'the academic' as having a lack of knowledge about commercial science. In these cases, and as an SME CTO (respondent number 3) describes:

> 'Academics are a pain in the arse, serious fucking pain! Get in our way, know nothing about what we do…arrr…but does that matter? They speak and buyer listens. Nobody views the academic, just the institute! I target them, hammer them, must, must make the buyer see the are all ivory tower. Talk business, use the right words. Legitimise myself as the business guru. Be the scientist and seller. Fuck the academic they know nothing about business'.

Again threats from other communication channels are highlighted and actions described for how to 'deal' with such situations. As a further example of targeting other undesired communication channels, an SME CTO (respondent number 6) considers 'anyone says something undesirable, you go after them, kick their legs in. Show everyone that they don't know what they are talking about! Shout it from the rooftops'.

While much criticism is made towards academically obtained business knowledge, with the exception of the SME CEO and SME MD (who argue the superiority of their MBAs), business knowledge is respected if obtained within the respondents respective companies, although at times this is also contested. According to the SME MD 'It's nice that people think that their business training, in, companies amounts to anything. It's enough to get by. They are paupers, and with an MBA you are a king!' Having an MBA qualification is argued as critical for being able to self-identify as 'real' and is cited by the SME CEO as being 'bloody hard work! Yes I mention it and use what I learnt from it every chance I get! I want people to know I'm not one of them, not an ordinary scientist!' Coupled with the argument that it is about being perceived as a scientist and a manager, the two respondents show their constructed power-base that they believe is difficult for others to challenge.

Importantly however, two MNE buyers (respondent number 11 and 13) criticise SME managers with MBAs for constructing themselves in this way. It is not known if the MNE buyers are referring to the two individuals within this study, but it is likely. As one MNE buyer complains (respondent number 11) 'Managers with MBAs use too much business speak. We don't need it! It's confusing and it lacks the purity of science'. This is interesting as it mirrors prior comments from the MNE buyer who states a similar preference for controlling discourse by the use of technical terms, '[Laughs] throw in a load of technical jargon they don't know, and hey presto! They are confused as hell!' Business terminology lacks 'the purity of science' and appears to irritate respondents, as they cannot understand the contextual meaning. In other words, business terminology is perceived as floating in the ether decoupled from the physical world and as such, is meaningless. An MNE buyer (respondent number 12) expands on this point by saying 'Hah! Business speak, no relation to the world, completely at sea. Not real in anyway, not like science'. Examining this aspect further though, many of the respondents, excluding the SME CEO (respondent number 1) and SME MD (respondent number 4) raise concerns about the use of non-scientific terminology (framed as scientific language), and particularly the use of business terminology. These comments range from short statements by an SME buyer/seller (respondent number 2) that 'business speak is, is a bastardisation of science' through to more nuanced arguments. An example of this is put forward by an MNE seller (respondent number 9) 'allowing this kind of yapping into sales conversations about science indeed! It erodes the beauty of science, it's like oil and water. And the biz talk is the dirty and unclean bit obscuring the clarity of what we say'. It appears that part of the reason for this statement is based on 'our need to keep marketers out of what we do, they are competition too'. Again, the theme of a competing communicator is encountered, and in this case is through marketers. This theme of reducing the potential perceived impact from any competition over the right to speak and legitimacy of discourse is cited numerous times by many of the respondents.

An important question can be asked about why respondents without MBAs do not construct a dual and hybrid identity as a scientist and as their business role, and for example as a scientist seller? This is perhaps even more pertinent when

this is considered against the backdrop of the SME CEO (respondent number 1) and SME MD (respondent number 4) where claims are made that it enables them to increase their standing as scientists and managers, depending on the individuals encountered. Looking at the discourse that other respondents give, they lack the clear promotion of the two disciplinary identities that the SME CEO and SME MD use. This is not to say however that the other respondents do not produce more than one identity, as when faced with an academic scientist, they reconstruct their identities to 'industrial scientists', 'business scientists' or other such variants. It appears that this may be facilitated by a desire to be perceived as a better 'other' to any competition. An example of this is shown by an SME buyer/seller (respondent number 7) 'Hmmm…well first and foremost I'm a scientist but I flip to show my business credentials, as ummm a seller and buyer, when, when the need occurs'. Role identity is predominantly framed through what appears to be a promoted view of a scientist being in an organisation, where in the eyes of the respondents being a scientist is 'good enough' and 'better than the rest'. This is in comparison to any other organisational actor and was something that appears throughout all of the respondent interviews.

Finally, a further sub-theme that appears is the ability to trust an individual as a communication channel based on their promoted self-identities (which is discussed in section 4.1.2), and is coupled with the construction of individuals not trusted by the respondents, as shown in Table 4.6.

Respondent ID	Role identity and trust	The 'others' role identity and trust
10. MNE Seller	'Science is trusted, and I'm a scientist, so, y'know I'm trusted'	'Who the fuck trusts business?'
9. MNE Seller	'It's, hmmm about what's real, you can trust what is ummm real. Science is about what's real'.	'Business is built on a foundation of nonsense. I use economics as that's a science, its real, but avoid business'.
2. SME Buying/Selling Manager	'How do you want to view the world? If you want to see truth, use science!'	'If you want lies use business'.
13. MNE Buyer	'We don't lie!'	'Marketers lie!'
5. SME CFO	'All the way from our undergrad, we speak the, the lang, language of truth'.	'Not easy to compare, I only know what I see. But I don't trust these guys in business!'
1. SME CEO	'Everybody knows this! Everyone, and I mean everyone knows you can trust a scientist'.	'It's difficult being in business. As soon as I say I'm CEO they don't trust me!'
7. SME Buying/Selling Manager	'[Laughs] Well if you can't trust a scientist who can you trust?'	'Isn't this what you learn in business school? Screw em over, make money!'
11. MNE Buyer	'I'm bound, I'm like a medical doctor. Bound, bound to tell the truth'.	'Oh yes! I've worked with sales guys, couldn't trust one of them!'
3. SME CTO	'Ummm I like to think I'm genuine. And look! It's not easy! I'm in business, but I attempt to have integrity'.	'It's a bad conflict, do I become the business man? Sell out? Sell my soul?'

Table 4.6. Respondent trust in science and business

Looking at Table 4.6, there is a propensity for respondents to frame the scientist/business divide as 'good' and 'bad' respectively. Importantly truthfulness is linked to this divide, where respondents construct themselves as truthful scientists or 'good guys' and marketers/managers as the 'bad guys'. These are arguably archetypes that enable a simple but blunt view of organisational life as well as the ability to promote desired aspects of master

narratives, where scientists bring truth. These aspects are further detailed in chapter 5 in section 5.1.4.

Drawing this section to a close, numerous aspects have been considered for the science/business divide detailed by the respondents. Importantly, science is framed as having primacy over all other areas to know and communicate about the world, which also extends into selling and buying. Based on this primacy is a desire by respondents to promote themselves as scientists engaging in organisational roles, as a means to strengthen their discourses as legitimate. Coupled with this though is a constructed divide between science-based and business, where science is promoted as a truthful way of knowing and communicating about the world, and business as a deliberately deceptive way of communicating. Even though business terminology is criticised by the respondents, it is still used, particularly where it can further legitimise or erode competitor communications. Thus, although scientific terminology is preferred, a fluidity of terminology and linguistic tools is chosen by respondents to suit their communication needs, and often based on communications encountered.

After much examination in this chapter of numerous themes, a final drawing together of these themes is made in the following section of the summary.

4.2. Summary

This chapter examined the findings and analysis for respondent constructions of science as an organisational and academic discipline. Major themes of respondent self-identities, science as true, the power and persuasiveness of science, and the science/business divide have been considered. These themes are not in isolation from each other and in many cases themes have supported each other, and overlapped. Taken together, they may ultimately allow us to view science as a master narrative; thereby constructing the space the respondents exist within.

Looking at respondents as 'the scientist', almost every respondent self-identifies as a scientist, even though in each case their job title is a business role. The only exceptions to this are the SME CEO (respondent number 1) and SME MD (respondent number 4) who have dual identities as scientists and managers, which can be cycled between as required, thus enhancing the relative power in interactions accordingly. Even though all respondents predominantly self-identified as a scientist 'doing a business job', should a more 'powerful' scientist such as an academic scientist be encountered, respondents indicate that their discourse will shift to promote their business identities. These shifts mirror the tensile discursive positioning highlighted by Ellis and Ybema (2010).

Respondent claims for being scientists are not only linked to academic and organisational training, but also an ability to promote themselves as bringers of 'truth and objectivity'. The frequent promotion of science as true and objective creates a discourse channel that respondents feel cannot be challenged, and a way of dismissing other discourses as 'untrue and corrupt'. Importantly, not all respondents appear to believe their claims of science as true and objective, but all appear to see it is an effective vehicle for inducing trust in their organisational life as well as in selling and buying.

The ability to claim science as true and objective also feeds into the stated power of science. The importance of science is routinely referred to and is highlighted by an MNE seller (respondent number 8) as the 'most important discipline' for which 'all other subjects should bow to' and 'should not be challenged'. The use of this lens, which is predominantly targeted at organisational actors who have a limited knowledge of the natural sciences, enables a monopoly over what discourse can be accepted about science. In this way, discourse can be controlled by respondents to self-legitimise their position as long as it can be linked to science and creates a power-base built on science. The SME CEO (respondent number 1) and SME MD (respondent number 4) differed on this view, only inasmuch as they will use their 'recognised' business identities as scientist managers to control science discourse. However, both respondents report that they still prefer to control discourse through science whenever possible.

The preferred vehicle for all respondents to promote their views of science is through persuasion. This ranged from gentle persuasion all the way through to absurdity with the choice appearing to be linked to the knowledge of the recipient. The more knowledge the recipient has, particularly in science, the more gentle and based in scientific 'fact' the claims are, reflecting sales interactions where sellers and buyers are predominantly scientists. However, in cases where actors are encountered who have a limited knowledge of science, 'blatantly untrue claims' can be used, as there is a perceived limited ability of the recipients to validate claims. Importantly though, some of the respondents criticise 'wild claims' as obscuring meaning and the 'reality of products'.

Finally, how respondents engage with perceived and constructed aspects of the science/business divide is considered for their organisational life. Science is primarily framed as a vehicle to truth as opposed to business, which is a vehicle to corruption. With much discourse from the respondents about the corrupting element of business, no respondent identified any corrupting force on how they engaged with their selling or buying discourses. This potentially feeds into respondents identifying as a scientist first and with a business role identity second. More than this though, the constructed science/business divide enables respondents to link with and utilise narrative/stories of science and business to promote themselves as archetypal 'saviours of the world standing against the corruption of business'. Such archetypes are also used to delegitimise competitor actors such as other business sellers and academics who were both referred to as 'corrupt scientists' and 'lazy communists who want to stop commercialisation' respectively. Thus, the respondents can, as required, promote their discourse and identities to benefit their organisations and themselves via archetypes.

The next chapter expands on themes drawn out in this chapter and gives an in depth examination of selling and buying.

Chapter 5. Findings and Analysis II: Selling and Buying

5.1. Introduction

This chapter focuses on respondent constructions of discourse used for selling and buying of nanotechnology products. An examination is made of the following of sellers and buyers, and how and why nanotechnology products are constructed as high technology products. A further focus is made towards understanding marketing communications used in sales, as well as how communication is used to persuade and how conflicts are minimised. Critical to this chapter are the following discursive themes, highlighted by demonstrative respondent discourses, shown in Table 5.1. These themes show how discourses can be used in selling and buying to construct shared meaning, legitimising what is said, and where necessary othering others through delegitimising their discourses.

Themes	Demonstrative respondent discourse
Technical vocabulary	'Techie vocab is a double-edged sword, useful when the other guy gets what you mean but a nightmare when he doesn't'.
Scientists buy from scientists	'I'm a scientist, and…and you know who I want to buy from? A scientist!'
Expertise	'Knowledge of science products, makes me the expert! I can sell as I know!'
Control	'I'm in charge of the sale, I have the power, I have the knowledge, you know?'
Fit-for-purpose	'Products have to be fit-for-purpose, so does what I say, all works well'.
Real solutions for a real world	'Look, nano is what works, its real, what you need, need to use in the real world'.
Marketing language as deceptive	'I wouldn't trust a fucking word from a marketer, marketing is all fucking lies'.

Table 5.1. Selling and buying themes and discourses.

The first section, which forms a foundation for this chapter examines respondent constructions of sellers and buyers.

5.1.1. Sellers and Buyers

The construction and promotion of respondent role-identities within an organisation is important for inter-organisational relationships and for the way that organisations construct and promote their own role-identities (Scott & Lane, 2000). Thus an examination is made of this aspect, with respondents linking their constructions of role-identity to their selling and buying activities within their organisations. Respondents split their organisations into (1) SMEs who have dual functioning seller-buyers, (2) MNEs who have sellers, and (3) MNEs who have buyers. A pictorial representation of the trading relationships in this sector is shown in Figure 5.1.

Figure 5.1. The trading relationship between respondents, showing the direction of sales, where MNE sellers sell to SME-Seller Buyers, who later sell to MNE Buyers. Importantly, it must not be assumed that the same products are sold along this 'chain'.

The trading relationship depicted in Figure 5.1 shows SME seller-buyers existing in a sales/purchasing isthmus between the two groups of MNE respondents (MNE sellers and MNE buyers). Products sold to SMEs are predominantly described as entering into SME R&D cycles, where the finished product is later sold to MNE buyers, but is different to what has been purchased. An example supply chain given by an SME Seller (Respondent number 8) is "nanoscale chitosan [crustacean shells] sold from an MNE to the SME, where it is chemically modified to be chemically bonded to silver nanoparticles. So we buy nanoscale chitosan particles that have had silver nanoparticles added to them". Importantly, no linear product route is suggested for any nanotechnology product through these three companies, as there are multiple MNE sellers and buyers as well as SMEs all engaging in R&D, manufacture, sales and purchasing.

Although the SMEs buy and sell to MNE organisations, no mention is made throughout any of the discourse regarding MNE organisations directly engaging with each other, although this may well happen. This may be linked to the promoted trade secrecy surrounding buying and selling events, where all respondents appear uncomfortable discussing 'wider' relationship aspects of how other companies interact with each other.

This area of study examines discourse driven by the question 'could you tell me about selling/buying within this company?' Answering this question, and as a main theme shown in Appendix G, is the stance shown by all respondents that scientists buy from scientists. This appears as not only a preference, but also as a practical way of doing business, which the respondents claim to thrive within. As might be expected, this aspect can be further broken into smaller parts, and looking at a pertinent example respondents link their roles to organisational resource, where larger organisations (MNEs) use a greater level of resource to employ separate buyers and sellers, with different knowledge sets used in the process of buying and selling. Importantly though, buyers and sellers all identify as scientists selling and buying, as detailed in the previous chapter. An MNE seller (respondent number 10) supports this by stating:

> 'Look, we, ummm, we have the resource, we have the cash to employ the right man for the job! Better than smaller companies! But hey! I'm a scientist seller, and I sell as a scientist, this is why I work here. We have money and my company can, errr, well it can afford me. I do one job, speak to scientists with the same background as me. Smaller companies don't have this luxury!'

There is often a dismissive attitude from MNE respondents towards SME organisations for their perceived lack of resource to employ separate sellers and buyers, with separate sellers and buyers being utilised by MNEs. An MNE buyer (respondent number 12) discusses buying activities used by SME respondents by saying 'I like working with them, they are good guys. But, mmmm, but they need to man the fuck up! They need to make some money and join us in the big leagues mmmm, well maybe they don't as we don't want them doing the job we

do, but y'know what I mean?' Importantly, while it is argued by this respondent that SMEs should increase their resource through growth, there is a concern that SMEs might pose a potential future threat as a competitor if they 'achieve success'. MNE buyers more frequently discuss the negative potential aspects of SME growth with SME sellers constructing this as a positive outcome. Respondent number 13 highlights the MNE buyer stance by commenting that 'They make their stuff, and we know they know it better than us. The last, and let me repeat last thing we need is their ability to sell without us, dir, directly into the market!' Typically MNE sellers (respondents 8-10) appear to use more positive discourse towards SME growth, focussing on aspects such as 'they grow, we grow' and 'I hope they get huge! Then I sell more!' This suggests that different stances taken by MNE buyers and MNE sellers are potentially individually as well as organisationally motivated, where SME success is framed as 'bad' or 'good' respectively.

SME respondents all self-identify as having a dual role as buyers and sellers, which is linked to a lack of company resource to use separate individuals to carry out these tasks, with there being a high number of discursive claims to support this. As the SME MD (respondent number 4) states 'I've not seen another like sized company who can afford two people to do it, one has to suffice, and even that can be a struggle to afford'. This can be likened to one SME buying/selling manager (respondent number 2) who comments that 'we never have enough money, and, ummm, we all do more than we should. It's good training, but hard, doin both lets me see both sides, mmm of selling and buying', suggesting a benefit from being a buyer and seller. Although much SME respondent discourse focuses on constructed difficulties of carrying out multiple activities, it is also frequently promoted as an advantage to gain greater insights into organisational life, as both a buyer and seller. The SME CTO (respondent number 6) highlights this by arguing that his organisational identity enhances his capabilities as a seller-buyer, where 'wearing multiple, mmm, hats is hard. It's an advantage though, I buy and sell, and many hats helps me see more, and, and, ummm, understand more about the buyers and sellers I deal with. I see me in them, and I try to see me in them, as I buy and sell'. This suggests a potential phenomenological stance on the part of this respondent to attempt to see the

worldview of MNE buyers and sellers. Using this respondent's comment to explore this potential phenomenological aspect, I asked further questions to aid my understanding of this aspect. Questions focussed on why the respondent might want to see himself in other buyers and sellers, and the sellers and buyers in him. The same respondent states:

> 'We are all the same y'know? All doing what we do, all wit, with the same type of nano products. I sit on both side o'the fence and I know that, mmm let me, how do I say this? Ok, in the words of Atticus Finch "you never really know another person until you walk around in his skin". Not quite right! But, any…way, I'm tryin to say that if I can see what he sees and me him, we can get each other. Buyin and sellin becomes easy as pie!'

This suggests that the respondent potentially views a phenomenological approach as being conducive to selling and buying, through a facilitated route to share meaning, which is discussed throughout this chapter. The notion of seeing the world through another's eyes was often discussed by many of the respondents, but usually to support their own buying or selling activities.

Looking more at the way that SME respondents perceive their interaction with MNE sellers and buyers, SME respondents repeatedly argue that a difference is noted between the ways that MNE sellers and buyers act towards them. SME respondents frequently argue that MNE sellers are helpful, and can be linked to a belief amongst SME respondents that this is a vehicle to facilitate sales. As an SME CTO (respondent number 6) says 'they are helpful as they want to sell. They help us as much as they can, disseminate information, give us what we need, anything that increases the chance of a sale'. SME respondents seem to believe that there is a greater degree of honesty on the part of MNE sellers in this respect, and as an MNE seller (respondent number 10) argues, 'yeah…they know why I help them, it's to sell, I'm upfront!' This suggests that SME seller-buyers share a similar view for help offered by the MNE sellers.

Critically, MNE sellers perceive SMEs as a continued buying opportunity for their products, which will eventually end up being sold to MNE buyers. Within this relationship, SME respondents view MNE buyers as less helpful and potentially more duplicitous than MNE sellers, as they perceive a greater level of power that can be exerted by MNE buyers throughout the sales relationship. Examining promoted MNE buyer discourse about this aspect; it indicates that MNE buyers do not always seek mutual SME benefit with SME sellers in the sales event, with MNE buyers arguing their organisational needs as primary to any other need. Commenting on this, the SME CFO (respondent number 5) suggests that the power available to MNE buyers distorts the selling-buying relationship in favour of the MNE buyer, 'They know they have all the power, and they can wait and grind us down to get a better price. They have more money! Simple as that! And we have limited selling opportunities! It's not like we can sell to Tesco!' This is not to suggest that SME respondents feel that they have no negotiating power in the relationship but that it is against a backdrop of greater power on the part of the MNEs. The SME MD (respondent number 4) states, 'We have a couple of buyers we deal with, ummm, and! Let me tell you! They erode us! Every fucking time! All they bloody well do! Reduce our prices to fucking nothing! What can we do? Ammm, we have to sell'. One MNE buyer (respondent number 11) comments on this practice by stating:

> 'I know we screw SMEs over. But look at it from our point, they know the tech like nobody else. Its dangerous territory for us y'know. Say they can grow and distribute, they know we haven't treated em well. So we deliberately pay low prices, keep them low, stop em growing. We only do, do it when they are perceived as a threat'.

Discussing what he perceives to be the MNE buyer view, an MNE buyer (respondent number 12) states, 'we are in a difficult position. We all are. Be nice? Be their friends? Yes and no! We have to seek our ends, company ends, do what we do, we know who we work for'. This suggests that this practice is organisationally driven, and perhaps carried out by other MNE buyers within the same organisation.

Within the interactions between sellers and buyers, is a perceived threat from SME growth into controlled MNE buyer markets, which occurs as a frequent theme from MNE buyers, particularly where there is a potential for SMEs to develop sales networks outside of MNE control. This theme is not discursively presented by SME sellers, who simply perceive increased opportunities to sell without a loss to their key markets. Describing this aspect, an MNE buyer (respondent number 11) does not elaborate the extent that this practice is directed from his organisation, but he implies that it is a standard practice. This is taken from his comment 'Not everything is shouted by management, I mean, they don't say be scared of SME growth, but, but at the same time, it is just somehow expedient. And I act accordingly'. In comparison to many other themes, this received a relatively low discurisve frequency, but during the interviews it appeared that it was something that did not need frequent repetition.

Looking more in depth at the knowledge that respondents claim to have access to, all SME seller-buyers promote themselves as product experts for what they buy and sell. There is a high frequency of discursive claims from all respondents to enforce their view of being product experts. There is however a perceived disparity by SME respondents about the knowledge that they can leverage for selling and buying, in comparison to MNE sellers and buyers. While it appears that SME respondents always frame themselves as 'true product experts' linked to in depth knowledge, they also describe a capability of MNE buyers and sellers to have access to wider knowledge, due to more employees engaging in this activity within MNE organisations. For example, an SME buying/selling manager (respondent number 2) comments that:

> 'I'm…I'm an expert in what I do and what we sell. Nobody knows m're than me, but there is only so many hours in a day. The buyers we deal with are experts too! Not in what we sell necessarily, but they have a big pool of knowledge in their company to dip into. Other sellers nd buyers. We have me!'

Although all respondents argue that the selling-buying event is predominantly dyadic in nature, respondents claim to be able to access different discourses, and

different comments depending on the nature of their organisation. MNE respondents for example can increase their exposure to supporting discourse for selling and buying as a consequence of greater MNE resources. In comparison to the MNE resource, the SME MD (respondent number 4) mentions 'I'm an expert but I can never learn enough! We can never learn enough. Need to jam as much info in my head as possible. An uphill struggle all the way!' 'Learning enough' is a frequent comment to substantiate knowledge already held by respondents to support their claims of being expert speaker. While it might be expected that a high-technology orientated SME might sell limited products, thus reducing the knowledge needed, respondents argue that as they are R&D based, this is not always the case. As an SME CFO (respondent number 5) states:

> 'The bigger guys who we…sell to. Well, well they are always pushing at what our products and R&D can do. Always, mmmm, always wanting to do something else odd with it. This is such a burden on me; I have to try to learn ASAP, what they are banging on about. I fail to learn the company fails to sell.'

This demonstrates a perception by the SME respondent that a failure to learn can result in sales losses. It also suggests a potential need for sellers to be adaptive to changing their discourse for these new products, and is discussed throughout this chapter.

Although discussed at length in Chapter 4 Section 4.1.3 for 'The Power of Science', respondents also frequently discuss the theme of power for selling and buying. Looking at the aspect of power in buying-selling relationships differences are noted in the way that respondents claim to engage with and use power within these relationships. Examining MNE respondents first, and perhaps not surprisingly, these respondents claim to be able to exert more power over SME buyer-sellers, in comparison to the power that SME buyer-sellers can exert. Comments are made that the nature of MNE resources enables power to be exerted to predominantly influence product prices, and for example, high for MNE sellers and low for MNE buyers. As one MNE buyer (respondent number 11) states 'I want, and my company wants what we need, and low prices as a

given. I can't fail on this. But I need smaller companies to respect me, and my company'. In this and similar discourse, MNE buyers frequently promote themselves as an extension of the company they work for, and in other words, as the MNE is powerful, so are they.

MNE sellers appear to take a different view of the power relationship they have with SME seller-buyers, supported by an MNE seller (respondent number 9) comment, 'The SMEs we deal with know we have the upper hand but it hurts our sales to remind them of it!' Finally, SME respondents corroborate MNE seller claims that MNE sellers rarely remind them of the power difference, as an SME buying/selling manager (respondent number 2), comments, 'It just hurts sales if they are dicks about it, so they are pretty cool all in all'. SME respondent perspectives of MNE buyers are detailed by an SME CTO (respondent number 6) who states that MNE buyers are 'Irritating as hell! We get on fine, but they don't half make you feel small at times! We know they have more money and don't need to remind us every two bloody minutes!' Importantly this issue of power is constructed differently by the SME CEO (respondent number 1) and MD (respondent number 4), with the SME MD stating 'I've heard that some buyers can be right, right arses! Hmmm, well they don't try that wit, with me! It might work with your average fellow. But I run the bloody company and will speak to their, their bloody CEO if they get uppity!' From this and other SME comments, it appears that the SME CEO and MD may experience preferable discourse due to their organisational positions. This is linked back to the previous chapter (4), in Section 4.1.1, which also highlights perceived differences described by the two SME respondents based on their MBAs.

The last theme drawn out in this section focuses on the seller or buyer as the 'insider' or 'outsider'. The construction of any individual as either an insider or outsider is arguably a blunt tool, but appears to capture what is felt important by respondents to label other buyers or sellers engaging within the buying-selling relationship and builds upon Section 4.1.1 in Chapter 4. Using this view, insiders are framed as 'one of us', 'he's like me', 'he gets it' and 'you can trust scientists, but only the right type'. To be considered an authentic insider requires being a scientist, whereas highlighted in Appendix G in the repertoire child node,

scientists buy from scientists. However, as will be discussed, other criteria are also required to be an insider beyond just being a scientist. Exploring this aspect further, it appears that the language used by a scientist is judged by respondents to decide whether the view to be an insider can be considered valid which can also be linked to being fit-for-purpose. Commenting on this, the SME MD (respondent number 4) states, 'it's what he says lets me know if he's real or faking! Don't want no sports scientist selling to me! Can't trust his knowledge!' Examining this aspect further, the following response by the same respondent is also insightful:

> 'As I said…earlier…I know how real a scientist is. I ummm, don'need to see their CV, I can tell! [sings]"It's in his eyes", well actually, it's in what he says! Some namby pamby comes and starts going on 'bout nanotechnology this and that. But! But! Here is the thing! What he's saying is all wrong, all wrong. Doesn't know his thin-film from his nanoparticle. Y'can usually tell their real pointless sci background by their chitter chatter. Certain phrases give it all away!'

This suggests that this respondent is gauging whether a scientific identity can be regarded as an insider/outsider by the comments used by the speaker. After detailing who the respondent might consider as an outsider, this was followed up by my question 'hmmm, and what makes you feel inclined to regard someone as a real scientist?' The same respondent states 'look man, it's about knowing the game, knowing what to say and saying it. You come at me and say nanotechnology, and I'm like, thinking to m'self "the fuck is this guy on about?" nobody uses that term, real scientists say nano!' Thus it appears that within a discursive claim, there can be multiple claims ranging in length and power to highlight a point. Looking at the last comment made by the SME MD (respondent number 4), the statement of 'real scientists say nano' is a brief but powerful statement to legitimise and delegitimise different individuals at the same time. It also suggests a level of knowingness that should exist within a speaker, based perhaps on cultural knowledge of nanotechnology, that nano should be used instead of nanotechnology.

Perhaps not surprisingly, all respondents view themselves as insiders and a pivotal part of the selling-buying relationship and process. The question can be asked though, what are the socially constructed boundaries and demarcation points for regarding someone as an insider? As discussed in Chapter 4 and Section 4.1.1 only a scientist can be considered an insider, with an individuals' discourse being used to determine their legitimacy as authentic. Where relationships with other insiders are described, they are constructed as long-term resulting in an in depth knowledge between individuals and their organisational requirements, and ways of using discourse to achieve goals. An MNE seller (respondent number 8) discusses this aspect by saying 'the idea is to build up that long-term really and get everything solid. Give us time, we figure each other out, Hah! And what to bloody well say!' The discursive claims used in nanotechnology and high technology sales are examined more closely in the following section of nanotechnology as high technology products.

5.1.2. Nanotechnology as High Technology Products

Before this study was carried out, SME and MNE companies were identified that positioned themselves as selling and buying nanotechnology products. This initial contact enabled all respondents to be selected that engage primarily with biologically based nanotechnology products, meaning all companies buy and sell similar products. Questions used to drive this section include, 'What high technology products do you sell/buy?' and 'What value do you place on understanding high technology/nanotechnology for the process of buying/selling?' Focussing on these questions facilitates a greater understanding of the way that respondents view nanotechnology in the sales event, and at what level, if any, nanotechnology products are constructed as high technology?

As a starting point, and throughout this study, all respondents undertook to position themselves and their companies as involved in buying and selling nanotechnology products, particularly biological nanotechnology. While there is agreement by all respondents that nanotechnology is not necessarily high technology, as lower forms also exist, it is important for their constructed value

that nanotechnology is only high technology. Expanding on this concept, the SME CTO (respondent number 3) states, 'low nanotech is what everyone else does'. This and other similar comments sought to reduce the credibility of competitors but also to elevate the self-worth of the respondents. An SME CFO (respondent number 6) highlights, 'we are purveyors or high tech, the luxury of nano'. Examples of the promotion of nanotechnology are shown in Table 5.2.

Respondent ID	Promotion of Nanotechnology
1. SME CEO	'We aren't one of those skanky nano silver companies you know! We are the elite! The best!'
2. SME Buying/Selling Manager	'Everything we make is nano, proper nano'.
3. SME CTO	'Mmmm, well there are many, mmm, many types of nanotech, and we only deal with the good stuff'.
4. SME MD	'Who the hell wants to sell crap? Nano gives us power over the other sciences. We are the elite and everyone sees that. We can't contaminate the brand'.
5. SME CFO	'[Laughs] nano is as high tech as you go. Think rockets, space, new worlds, ummm although we don't make of this stuff'.
6. SME CTO	'We promote nano as high tech, we have to! People want the best, they want an unreality, and nano gives them that'.
7. SME Buying/Selling Manager	'It annoys me no end when people say nano isn't at the high end of technology. Arrr, just say it is, it makes it profitable'.
8. MNE Seller	'We sell nano, why sell anything less'.
9. MNE Seller	'For nano you really need the highest purity ingredients, you have to have the best stuff there is. And I sell this'.
10. MNE Seller	'Nano brought purity to our sales, cleanliness. We don't deal in those nasty bulk chemicals'.
11. MNE Buyer	'Our customers all want nano. It is the thing to have'.
12. MNE Buyer	'You think of nanotechnology, and you think high technology. The highest of the high!'
13. MNE Buyer	'I buy nano, we sell nano. It is who we are, our brand. It says to the world "fuck you" we have the best, and you have nothing!'

Table 5.2. Respondent promotion of their companies as 'nanotechnology' companies.

Table 5.2 shows buying and selling nanotechnology as being a pivotal aspect of respondent company promotion undertaken to position their identities, at least in

the way that respondents view this. It appears that respondents promote their organisations as nanotechnology companies to enhance perceptions by others of their organisations and of themselves. As an SME CTO (respondent number 6) claims, 'We are the elite, and competitors see this about us, as elite and so do our customers'. Claiming an elite status for nanotechnology products above other high technology products is thus critical for many of the respondents, and particularly for SMEs.

Being able to increase their own and organisational values is also a means to implement commercial barriers for potential new market entrants, and as the SME MD (respondent number 4) claims, 'we make claims to make sure people think they can't replicate what we do. If anyone asks, tell em we're building a new wonder drug. Convince them! Don't let them enter our market!'

Thus respondents describe the necessity to communicate to the market more widely to attempt to stop new market entrants via the promotion of nanotechnology as ultra-high technology in nature, and as such unattainable for others. Commenting on this, the SME CEO (respondent number 1) states that ''ummm, it's a pain in the arse, and not exactly honest. But, but well, we put it about to people with big mouths, that, ummm, we are so high tech, you wouldn't even believe it'. Spoken discourse is cited as necessary by the same respondent so that, 'we can always deny what we said, never, never, never put it in writing, we might face legal action. All cloak and daggers'. This practice suggests that while respondents can promote themselves as truthful, and as utilising scientific discourse incapable of deceit, they will use less than truthful discourse when it is perceived as useful. This aspect is expanded on in the following section '5.1.3. Marketing Communication' and highlights the dualistic nature of respondent discourse, where contradictions are common, but capable of benefitting selling and buying.

MNE respondents appear to be more cautious in comparison to SME respondents, when describing how they communicate about their products. An MNE buyer (respondent number 13) addresses this aspect directly by saying 'we see some of the things SMEs say, and ahem, it is concerning. We know they don't have

resource, but the way they interact with competitors can only backfire. Don't spread untrue rumours about your products'. Examining whether this influences MNE relationships with SMEs, the same respondent comments 'not really, we see it for what it is! Dumb, just being dumb, and if they want to spend their time in this way, it's up to them. I'd advise they make their products as good as their, their rumours. Not that they spew this nonsense with us'. No examples of discourse are given for this aspect, but it appears that this MNE buyer perceives that SME sellers do not carry out this practice in the sales relationship.

SME respondents are keen to discuss the problem of resource, which they face, with an SME CFO (respondent number 5) stating 'with every man and his dog claiming they do high technology, and all claiming they are the best we need nano to differentiate ourselves'. MNE respondents also state a belief that their market is saturated with companies carrying out high technology selling and buying, where differentiation can be difficult. This is highlighted by an MNE seller (respondent number 10) arguing 'It can't be, can't be easy for small companies, they don't have the clout we do. So much competition for them and no weaponry to deal with competitors'. Coupled with this is the issue that SME respondents fear that they might use what MNE sellers and buyers consider poor discourse. With MNE organisations using experts in sales negotiations, SME respondents perceive a risk of making product claims that MNE respondents do not consider correct. As an SME buying/selling manager (respondent number 2) comments, 'It's easy to make a mistake about a product, y'know, y'can't know everything, and then what? Be perceived as some noob who doesn't know his nano?' Importantly, and linking back to Chapter 4, SME respondents often consider themselves as experts in their field of technology, but as they do not have access to the breadth of knowledge that MNE organisations have, there is a potential for miscommunication about products, which might impact upon their perceptions, and presumably selling. From prior discussions with respondents, in Chapter 5 Section 5.1.1 MNE sellers appear more helpful in such situations, as from related discourse, MNE sellers have a remit to sell, and apparently help arising misunderstandings.

Against a backdrop of creating potential relationship difficulties from unclear or misleading statements, the question was asked about the value of promoting nanotechnology as opposed to high technology. Discussing this with all respondents, the claim is made that it is better to use the term nano when engaging in buying or selling, as all companies want to maintain their image as nanotechnology companies. It can also be used to demonstrate an insider or outside status where insiders use nano and outsiders use nanotechnology. This means that everything bought and sold is under the umbrella of nano, as 'nano products' and 'nano constituents', such as 'nano x', 'nano silver', and 'nano antimicrobial' but with more information about products being needed to sell and buy. In what appears to be a further promotion of nanotechnology, meetings to sell and buy are framed as 'nano meetings', with 'nano sales' and 'nano purchasing' etc. These meetings are argued as being nano, due to the sale and purchasing of nanoproducts as opposed to being shorter meetings. This was discussed by an MNE seller (respondent number 9) claiming, 'These meetings are nano as we buy and sell nano, hah! So they are nano meetings. Get it? None of our short meeting stuff here m'boy'. Alongside the use of the term nano, the need to communicate effectively about the physicality of what is being bought and sold is argued as pivotal, particularly through spoken discourse. An example can be taken from the SME CEO (respondent number 1) stating, 'we want to buy and sell nano everything. It has to be nano something! But we are realistic and need t'make sense. So we buy our nano protein, but it is nano protein alcohol dehydrogenase, nano alcohol dehydrogenase, not alcohol dehydrogenase'. Similar comments are made by all other respondents that whatever is bought or sold has to be 'nano-ised'. As is discussed in many other parts of this study, the word nano is thus a potentially powerful word, capable of enhancing discourse simply by an appropriate use. Perhaps not surprisingly, this is an often-claimed aspect of selling and buying, alongside other technical terms, to shift power in buying and selling and to increase or decrease social distance.

Digging deeper into what is promoted or considered nano, an argument commonly made is that other scientists may not consider all products promoted, bought and sold within respondent companies as nano products. Attempting to understand this further, claims are made that 'everything' is nano to support

wider marketing claims, thus unifying product discourse. The SME CEO (respondent number 1) supports this claim:

> 'You, you have to differentiate between the category of nano and what we sell. Mmmm, what am I saying? Ok yes, things are nano as we say they are as we are a nano company. But, but they are physically nano because that's what they are. So we do sell products that aren't physically nano, but are within the remit of nano'.

Although respondents displayed difficulties in answering this question coherently, two different types of nano are differentiated. The first type is that everything is nano, but is not necessarily nanoscale, and the second are products that are scientifically nano i.e. nanoscale products. An MNE buyer (respondent number 11) went on to state, 'in this network, we all, all, all buy and sell nano things. We have to say this! It hammers home what we do. Mmm, mmm, but some of what we sell is not within a nano range, so technically not nano. It's a white lie'. A link can be made to sensemaking discussed in Chapter 6, Section 6.1.1 and highlights the importance of creating unified discourse that as nanotechnology companies; all buying and selling is of nanotechnology products. The promotion of nano can be viewed as macroscale discourse, where nanotechnology companies can simply create an identity for the marketplace through the frequent use of the word nano. Within the macroscale promotion of all products as being nano, is the general claim that scientifically, this practice was deceitful, and was something a scientist should not engage in.

Claiming all products as nano is generally perceived as deceitful, as the respondents all make the claim that scientists should only speak the truth. This is highlighted by the SME CEO (respondent number 4) saying, 'Look matey, we all know it isn't all nano, we scientists that is, nano scientists I mean, and yeah, yeah it is dishonest and cuts against that sciencey grain of truth, but we need to promote the biz of nano'. This suggests that authentic insider scientists are able to differentiate the nano claims from product physicality, and while potentially deceitful such practices are useful in commercial activity, although not necessarily 'worthy of a scientist'. This aspect is expanded on by an MNE seller

(respondent number 9) suggesting that 'you have to be careful the way you, y, look at this. Ummm. It's a little dishonest but the buyer knows what he is buying. No dishonesty there. We just make a marketing claim beyond this relationship that it is all nano. Helps what we do, doesn't hurt anyone'. Again, this promotion of nano is viewable as a macroscale communication where individuals 'with the right knowledge would be able to tell the difference', but outsiders would potentially construct views that these companies only engaged in nanotechnology. Exploring whether individuals beyond the seller or buyer know of these practices, the frequent claim was made that this is a practice common throughout the companies beyond the buyer-seller relationship. As an SME selling/buying manager (respondent number 2) comments 'we all know what the game is. Our companies tell us to do this! We can't afford different opinions of what we do. Everything is nano, simple!' Respondent discourse indicates that this is one of the few directives given from their companies for respondent communication, with only a macro-level instruction, and a simple communication for how to carry this out. Commenting on this, the SME CEO (respondent number 1) states, 'It's easy, whatever it is, just say it is nano, an expert in the area will know how to categorise it anyway [Laughs]'. This suggests that this communicative aspect can be contextualised by those with an understanding of the physicality of nanotechnology, whereas those without this knowledge may see it all as nanotechnology.

The ability for sellers and buyers to discern nanoscale based nanotechnology in the sales environment is perceived as critical by many of the respondents, due to wider marketing claims made by a variety of discourse sources, such as the media other popular culture communication sources. As an SME seller (respondent number 10) states, 'there is too much hype about nano. It is of course a collection of products and technologies. We however can use it to check what other scientists know. So, so, some fellow doesn't know his arse from his nanoparticle, and I know I have to change what I say, otherwise the sale won't work'. This approach from respondents to try to understand the level of knowledge of another individual in the sales relationship is carried out by several other respondents and is considered in greater depth in the following section (5.1.3).

Briefly, beyond the reasoning provided so far for claims that all organisational activities are nano-based, is the potential to align company products with government funding narratives for nanotechnology, with government funding agencies also being considered outsiders. In other words, the majority of respondents argue for a clear directive from their organisations to link, where possible, their discourse with government narratives for nanotechnology. An example is given by the SME MD (respondent number 4) claiming, 'the government are always sloshing funds around. Half the time our products don't fit. We turn a circle into a straight line! Bingo! We are now eligible for a grant. It's that bent, who checks?' Thus an incentive in the form of grants is presented for manipulating product discourse towards nanotechnology to fund core company activities, and is another example of unifying organisational discourse as nano. The question was thus raised about how the respondents view government perceptions of their organisational activities. Addressing this aspect, an MNE buyer (respondent number 12) makes the comment that 'like seriously, they must know that we aren't all doin nano, but hey man, they need to convince their voters that brand UK is tooled up and high tech. So I fig, figure they just go wit it, as long as we use nano, they hand the cash out. No idea about their real knowledge'. This suggests that the wider macroscale promotion can function to couple and match company and government promotions of nanotechnology, even when they can in physicality be quite separate. The comment 'No idea about their real knowledge' raises an important aspect of whether at the macroscale, all that is needed is similarly matching discourse, suggesting preferable decisions (as perceived by respondent organisations) being made by government on homophilous communication.

Finally, the promotion of nanotechnology is discussed for new and/or irregular customers, where a close dyadic sales relationship might be more challenging. In such cases, a difference is observed between the capabilities of SMEs and MNEs, where SMEs could only send one seller/buyer, in comparison to MNEs that could pre-identify a different individual's background and select from a number of sellers and buyers. This act of identifying the background of new/irregular customers is stated as having a higher importance in MNEs as they could affect different actions based on the information in comparison to SMEs, who argue

they do not have the time or capability to do anything with the information. In practical terms, MNEs claim they send a perceived fit-for-purpose seller or buyer, as they would in established relationships. Although difference was noted in strategy between SMEs and MNEs for how to deal with new or irregular customers, similarities were also noted in the promotion of nanotechnology. In all cases, everything is framed as nanotechnology; with other individuals discerning what is branded as nanotechnology and what is commonly accepted as nanotechnology. Irrespective of the perceived knowledge of nanotechnology, respondents claim that their discourse reflects this aspect. As an MNE Buyer (respondent number 11) states 'I have to be open and responsive to what they are saying. If they are an expert or a numpty, I have to change what I'm saying', with it being unknown if deception is continued. How this is achieved is considered in greater depth in the following section on marketing communication.

5.1.3. Marketing Communication

As might be expected, respondents construct marketing practices as pivotal for selling and buying, but with many challenges being faced for nanotechnology products. To be able to undertake these challenges, sellers and buyers state a need to examine discourses used within and between their organisations and how they are perceived. Expanding on this, an SME buying/selling manager (respondent number 7) states, 'so much confusion at times, challenges to communicate and make sense, of what is bought and sold! Anyone involved in this needs to be able to change how they see what they are doing, and change what they say immediately'. This can be further linked by the same respondent to an ability to adapt to confusing discourse, where making sense between parties can result in selling and buying difficulties: 'Mmmm, my ability to change my view and what I say is just pivotal, absolutely pivotal. Am I really changing my view? Sometimes, but I wanna reflect his chatter and make him comfortable to buy'. This again suggests deceit on the part of the respondent, but also that changing the discourse used, may be part of a strategy to engage in homophily. This led to further discussions about the nature of discourse during selling and buying events.

As a starting point, all respondents describe their buying and selling as being between a buyer and a seller. Claims are made that there is a limited influence from their organisations or from outside sources creating a perceived high level of autonomy as discussed in Chapter 4, Section 4.1.1. With selling and buying being face-to-face, respondents argue that this necessitates spoken communication between the two individuals. The theme of face-to-face meetings is shown in Appendix G, and can be linked to creating dyadic two-way closeness, which also received high frequency of discursive claims.

It is acknowledged that communication between buyers and sellers can also be digitally based and for example via telephone and e-mail, but that this is to set up a meeting, re-order previously sold/purchased items and to confirm what is agreed in a face-to-face meeting. Communications outside of face-to-face meetings, are stated by an SME CTO (respondent number 6) as being 'short, concise and to the point. They are to confirm only, and as a fail-safe to make sure we agree with what we are doing'. An example of this is also given by an MNE Seller (respondent number 10) who comments that 'we've, we have done the hard stuff, the negotiations. This is to make sure that we sell the right stuff. So, I send an e-mail. Dear Mr whoever, please confirm our prior discussion about molecule x at y weight and z cost, yap, yap, yap'. Importantly however, upon raising the question about whether there is ever any need to label products as nanotechnology products i.e. molecule x as nano molecule x, an argument is made that in some cases electronic confirmatory communications can be used to highlight a product within the arena of nanotechnology. This is only perceived as necessary when e-mails will be sent to a buying centre or to management who expect nanotechnology products to be purchased. As an SME CTO (respondent number 3) comments, 'I sometimes have to, to, put in some nano lingo, make it sound nano, otherwise buyer management gets suspicious'. An MNE buyer (respondent number 13) confirmed this by stating 'It can be quite common to ask our suppliers of nano products to throw nano this, nano that around, it convinces our guys higher up that it is nano!' Although promotional, it does not appear to change the communication of what the product is to the buyer. Importantly, it seems to function simply as a highlighting tool to enforce the nanotechnology claim of the product to non-scientists within the buying organisation.

Respondents predominantly claim that in person face-to-face meetings are more useful in comparison to digital methods for developing closeness between individuals and between organisations. Respondents identify closeness as being facilitated by physical meetings, with an SME buying/selling manager (respondent number 7) expanding on this by saying, 'we are all really busy, all pushed all the time. Mmm, so a meeting has to have a purpose, and we don't meet for silliness. So if we meet, I'm saying I value and respect you, otherwise I wouldn't be here!' A similar sentiment is given by an MNE buyer (respondent number 11) who states 'I only do meetings of value, I don't piss about, and if you want that, go, go elsewhere. But know if we do meet, it is because there is a point, and one of worth'. The value of meetings appears to serve a functional benefit to aid in selling and buying, but also to promote the sellers and buyers as 'only engaging in high value activities'. As the respondents displayed little interest in discussing this aspect further, this area is not expanded upon.

Meeting in person to buy and sell products appears important for creating freer flowing unplanned and reflexive discourse to facilitate a relationship conducive for sellers and buyers to learn more about each other. This is not to suggest that there is no element of pre-planned discourse on behalf of the respondents, but that all respondents reject the use of canned material. In practicality, this means that respondents often claim an agenda for meeting sellers or buyers, where there is a guiding principle for meeting, such as discussing a particular need or product. Respondents state that over time they develop experience and learn that canned and detailed pre-planned discourse is not helpful to selling or buying for nanotechnology products. As one MNE seller (respondent number 9) states:

> '[Laughs] look [Laughs] we all came into this game from science, and have some pretty, mmm, pretty screwy ideas of how sales worked. Doing it taught me you can't pre-plan everything. Sure, I'd like to! I'd love to have a tiny script and reel it off. Don't work, it just doesn't work. Has to seem real'.

Claiming that discourse 'Has to seem real' suggests that it is the appearance of 'genuineness' that is important, as to necessarily being real.

The use of pre-planned discourse is criticised by many respondents, and particularly the MNE buyers, with respondent number 11 claiming 'It annos, annoys, the hell out of me when some ass reads me a script. Credit me with some intelligence. We are not selling mars bars and I really don't like it. Show me, show respect and talk to me like a scientist'. Importantly the use of 'mars bars' as the subject matter indicates an unfavourable discursive marketing communication strategy to highlight an unfavourable technological product, or day-to-day product i.e. something low technology. Taking an overall view of respondent discourse, I am not sure if the respondents consider this type of product low technology, as the brief comments about what might be considered low technology suggest more scientifically orientated products as high technology, including 'things made by scientists'. An MNE seller (respondent number 8) demonstrates this by his claim, 'tech has to be science facing, ummm, ok well it can be anything, but seriously, it should only be science products'. Thus while it possible to accept the varying nature of technology products, an attempt is made by the respondents to create a divide between scientific technology products as legitimate, and non-scientific technology products as non-legitimate low technology products.

Claims are made that pre-planned discourse shows a lack of respect to the other party. This appears to be a consequence of respondents perceiving natural science discourse as fit-for-purpose and unplanned, therefore more desirable, in comparison to marketing discourse, which respondents perceive as planned and dishonest. This is an important aspect, as in practical terms, all respondents self-identify as engaging in marketing activities, albeit as science marketers. It is worth speculating that respondents separate scientist marketers from non-scientist marketers, via discourses used, where scientist marketers are constructed as potentially more honest than a non-scientist marketer. The SME CTO (respondent number 6) discusses this at length, with a comment that 'a dishonest man, [whispers] marketer, has to plan his conversation before he speaks! The knowledgeable scientist marketer can say what he thinks without fear as he is right!' This comment and others made by the respondent can be linked back to Chapter 5, Section 5.1.3 and highlights the distrust shown by the respondents of marketing communication when used by non-scientist marketers.

Even though all respondents argue that marketing communication is not to be trusted as it is dishonest, and subverts the purity of the way scientists describe the physicality of nanotechnology, all respondents discuss their use of marketing communication in this way. This is not surprising though when the respondents are seen as scientist marketers, which they promote as having the best qualities of being a scientist who engages in 'scientific marketing', without any of the pitfalls of being a marketer.

Within the numerous criticisms made by respondents about the use of marketing communication by non-scientist marketers, all respondents engage in marketing to sell and buy, as scientist marketers. This leads to the question of how respondents view what they perceive as marketing discourse as opposed to using what they perceive as natural sciences discourse. Digging into how respondents view marketing discourse first, they regard it as something separate from natural sciences discourse, where respondents argue they use natural sciences discourse. As the SME CEO (respondent number 1) states 'scientists and marketers are different. They just are! We speak the truth and they lie! But we sometimes have to use marketing in sales'. This conflicting and blunt highlighting constructs scientists as truthful and marketers as deceitful, and echoes in many parts of this study. Espousing what appears to be a more extreme view than other respondents, the SME MD (respondent number 4) argues that 'marketing is the language of the devil! You can use it to sell, but beware! As soon, all that will come out of your mouth is lies'. Although no other respondents directly equate marketing with demonic sources, marketing is routinely linked to being a deceitful practice, but one recognised as being able to create sales, and as such valuable. An SME buying/selling manager (respondent number 2) comments on this by saying, 'Fuck it, yes marketing works in the short-term, in the long-term though it is just too dark, dirty and untrustworthy!' This constructed divide used by several respondents for marketing and scientific discourse is captured and shown in Table 5.3, where respondents give examples of how they say something as 'the scientist', 'the scientist marketer' and how they perceive a 'marketer' says something.

Respondent ID	Respondent providing an example they claimed they would use as:		
	The Scientist	The Scientist Marketer	The Marketer
3. SME CTO	'Pure carbon nanotubes display an increased tensile strength over impure samples'.	'This product has ten percent increased functionality over other products'.	'Carbon nanotubes will redesign the future and will cure what ails ya!'
6. SME CFO	'We have demonstrated, mmm, an increased efficacy'.	'The product is out performing other products for the percentage cancer cells killed '.	'Colloidal gold is where the party is at. It adds to some high tech molecules, does some stuff you won't understand and then bang!'
10. MNE Seller	'Nanoparticles offer improved ways to deliver cancer treatments'.	'This nanoparticle product will couple to your existing molecule, and will enhance uptake into cancer cells, and we can demonstrate this'.	'Nanoparticles always kill cancer cells. You need to back this technology'.

Table 5.3. Examples of perceived discourse from scientists and marketers, where respondents constructed examples during the interview process.

Looking at Table 5.3, discourse from respondent examples, as the scientist shows no attempt to label the physical phenomena being discussed as products, with simple statements provided, and with limited claims for what the physical phenomena performs. Moving onto respondent examples of the scientist marketer, presents a shift towards labelling the physical phenomena as products and comparing these products to other products, albeit in a relatively abstract way. Marketing claims are relatively simple, and put in a way that can perhaps be easily understood, but it is of course questionable whether this is always the case, particularly where technologically complex concepts are to be conveyed. The respondents show that they perceive marketers to use discourse not well coupled with the physical reality of products. It must be noted that these examples may well seek to promote the respondents as truthful scientists and scientist marketers, which is a frequently mentioned theme throughout this study. Finally, and although not shown in Table 5.3, the SME CEO (respondent number

1) and SME MD (respondent number 4) are also considered due to their self-constructed dual identity (Chapter 4, Section 4.1.1) based on having scientific degrees and MBAs. Both individuals appear to take a more interchangeable stance, where they can promote themselves as scientists, scientist marketers, or marketers and use any discourse from any three of the identities as they perceive fitting. Importantly however, and due to their managerial positions, both of these respondents promote their managerial role, which is coupled with any other constructed identity. No examples of discourse are provided however by these respondents, and this area was not explored further.

The discourse from respondents might be expected to change over time from meeting a new individual, all the way through to developing a closer dyadic relationship, and as such this aspect is considered. Respondent discourse confirms this assertion, where with time, sales relationships become easier to maintain. This is due to a potential greater understanding developing on the part of buyers and sellers and a growing awareness of each other's discourse styles. The SME CEO (respondent number 1) comments, 'Mmm, everything takes time, and relationships take time. We put a lot of effort into building relationships and as we get more experienced, everything gets easier, including, mmm, what we say'. This is not to suggest that problems do not occur in selling and buying, with this aspect being explored in Section 5.1.4 in this chapter.

A different way of looking at the change of seller-buyer relationships is a potential move towards a homophilous (culturally similar) style of discourse. As discussed in Section 2.2.3, homophilous communication can aid sales, but is more difficult to achieve than heterophilous communication (culturally dissimilar), as individuals often do not have similar backgrounds . In this study however, and although there are differences in organisation size, structure and between individuals, there appears to be a high level of similarity between respondents and their cultural backgrounds, giving a potential for homophilous communication. It is however noteworthy that a potential for similarity does not guarantee homophily. Commenting on this, an SME CFO (respondent number 5) states, 'Just because we are all scientists doesn't mean we all get what they hell the other guy is banging on about'. Thus, and as suggested by an MNE Seller

(respondent number 8) 'Listen, ummm, listen, and think, and try to understand when selling and buying. When in doubt ask, and simplify'. This suggests that selling and buying is a reflexive iterative process, where individuals can learn from discourse, and reflect their learning in their discourse. There is a predominant view from respondents that discourse is driven by learning, and as an MNE buyer (respondent number 12) suggests 'Y'know, I've spent my life learning. It is no different here. I learn from what is said, and I learn what to say. In fairness, mmm, in fairness it is the only way to get what you need'. This implies that learning what to say is an important part of selling and buying, and is driven by the needs of the individual and organisation.

A move towards homophily is not always perceived as a simple task though, with progression towards a higher level of homophily often argued as starting with heterophily. The SME CEO (respondent number 1) comments that:

> 'Ammm, well, we get, ummm, a new potential client. Someone to sell to. A lot of hard work goes into getting on't the same page. Understanding each other. It often starts scraggly, y'know, all messy. Over the years this improves. You work hard though, and there can be a lot of disagreement!'

It appears that the move towards homophilous communication is based on a perception captured by an MNE seller (respondent number 9), where 'speaking the same language just makes everything easier'. Practically, MNE organisations are capable of being more proactive towards inducing homophily as they can select sellers or buyers with a similar science background to speak to individuals from SMEs. Being smaller, and with less resource means that this is not a viable option for SMEs who have access to only one seller/buyer. However, upon meeting new potential clients, a similar method is undertaken by both SME and MNE respondents, which is to actively engage with differences in discourse. This is often through altering language to make sure that sense can be more easily given and made of communication. As stated previously, this is argued as a reflexive and iterative process (but not necessarily with these terms) and one that is on going as part of a learning process on the part of both buyers and

sellers. This aspect of how homophily can give and make sense is more fully considered in the following sections of this chapter.

This section has explored numerous aspects in selling and buying, and although a foundation of understanding has been developed for marketing communication, the next section goes on to consider persuading in selling and buying to understand the role of persuasion in this event.

5.1.4. Persuading in Selling and Buying

Personal selling is recognised within B2B marketing communication studies as a vehicle to persuade and reconstruct a buyer or seller's point of view (Kotler & Pfoertsch, 2006). Thus, the act of persuasion, which respondents frequently discuss as critical in selling and buying is examined in this section. It is however detailed as not being a simple task, with multiple potential difficulties existing to potentially hinder this task. The SME CEO (respondent number 1) emphasises this aspect by stating 'Mmmm, well there are many things that get in the way of being able to persuade someone'. Before examining the 'many things', it is important to detail what it means for the respondents to persuade another individual and their purposes in doing so.

Persuasion predominantly refers to being able to show another individual the respondents' point of view extending into the future, and can be regarded as phenomenological in nature, with a potential to result in a desired action and outcome. Being able to facilitate a shared point of view is not necessarily regarded as coercion, with an MNE seller (respondent number 8) commenting that 'I don't, and we as a company, ummm, don't…want to strong-arm anyone. Why do that? Buyers see through it and know we are trying to pull a fast one and short change them'. The same respondent argues that applying pressure in the sales environment is 'ungentlemanly, and I am above such things', where language and the theme of discourse should be based upon respect. Persuasion is frequently framed as being conducive to long-term relationships, where future opportunities for further selling and buying can be achieved rather than in a

single event. An SME CTO (respondent number 6) highlights this by saying, ‘When I first, first started, yeah, I sold to anyone! Anyone! But it fucked me, as people distrusted me. Now I want longer-term sales. I have to, as we only have several potential…mmmm…clients’. This suggests a potential change in priorities, perhaps for both the respondent and/or the organisation, with it not being known which, as this aspect is not explored further.

For SME respondents, only having a few potential clients and other organisations to engage with appears to act as a stop-gate to regulate their selling and buying practices as well as discourse. From what the SME MD (respondent number 4) comments ‘Yeah, yes, with only having a few, ummm, clients we can’t afford to have them walking away for our quick profit’. The majority of SME respondents claim to draw on earlier experiences to change their selling and buying outlooks to work towards longer-term goals. Thus persuasion on the part of SMEs is constructed to show MNE buyers and sellers the world through their eyes, focussing on what they are selling or wanting to purchase, to inform decision-making. MNE buyers and sellers also take a similar stance, and although these respondents frequently discuss using greater power than SMEs, it is often couched alongside a need to recognise technical capabilities of SMEs in niche areas, which are vital to MNE interests. This also appears to act as a stop-gate to regulate the use of persuasion on the part of MNEs, where an MNE buyer argues that ‘gentle pushing towards a goal, rather than strong-arming is preferred on our part and theirs’, as a means to generate a long-term relationship.

The notion of gentle persuasion is further explored, for what it means in comparison to stronger approaches, with respondents broadly splitting persuasion into these two approaches. The gentler approach is seen as critical for developing long-term dyadic relationships, as the SME CFO (respondent number 5), says, ‘yes, yes, yes! Of course we have goals, and mine is to buy and sell what is need, needed. Mmm, but I need to be strategic, can’t be a bull in a china shop!’ The same respondent expands on this by saying ‘we are a small company, and bloody hell! We have to think about the future. So, so this means that we want to sell or buy, but, but it has be in line with what our suppliers and buyers want and are willing to do. We can't lose them!’ This reiterates prior discourses that SMEs are

aware of losing support from larger MNEs, and potentially acts to facilitate a goal of mutual benefits. Similarly, MNE buyers and suppliers provide discourse mirroring that of SME respondents, focussing on predominantly synergistic business relationships. An MNE seller (respondent number 9) highlights this by stating: 'Yes people screw each other over, but here, in nanotech, we have to work together for mutual benefit with each other, and yes we aren't always as good as we can be, but we try. It just has to be this way! Can't be selfish here y'know!' This suggests that while there is an attempt to work together there is a sense of realism that no relationship is ideal; where altruism and deceit can also creep in, and is discussed throughout this chapter, as a potentially inherent part of organisational life, irrespective of individual and organisational aims.

Coming back to look in more detail at gentle and stronger persuasion, gentle persuasion is discussed by an SME buying/selling manager (respondent number 2) as being 'a nudging process, to mmm, subtly drive them to our goals. I can't be too overt though [Winks]'. The wink suggests an element of game playing about driving another seller or buyer to a desired output, but without being seen to be doing so. An MNE seller (respondent number 10) suggests that 'I guess we are all at it, subtly going after what we want, but we just can't be caught!' These comments link to criticisms made throughout this chapter and of the previous chapter (number 4) where respondents construct marketers as deceitful, and themselves as scientist marketers 'above such things'. This is taken as showing deceit on the part of the respondents, or perhaps a lack of awareness that they are engaging in such activities.

Beyond, gentle persuasion, is stronger persuasion which is as an MNE buyer (respondent number 11) says, is 'bluntly…pushing and badgering him into my point of view. Blitzkrieg! Y'know?' Examples of both gentler and stronger types of persuasion are shown in Table 5.4.

Respondent ID	Gentler persuasion	Stronger persuasion
3. SME CTO	'you have a choice of what to buy here [Laughs] both are good but I'd go with this one'.	'Buy this one!'
5. SME CFO	'we don't sell bad products, ummm, I think this is probably what you need'.	'Only a complete tit would buy that for what you need'.
8. MNE Seller	'Let's talk about this and understand what you need. We do, do this and we can work out what's best for you. If you don't have time, I'll suggest it for you'.	'If you want to waste your time, I'd buy that!'
9. MNE Seller	'I have a lot of material, sales material to show you on all of this. I mean, I can show you all about all of these products. We have a lot. It might be confusing, and we can shortcut it and I can help you pick'.	'I dunno, I don't think we should waste time. I think you need this here'.
12. MNE Buyer	'[Coughs] I've known you a long time. And I'm fairly confident that we should get this. We have experience with these products'.	'You can always buy the other later'.

Table 5.4. Respondent constructions of examples of gentler and stronger persuasion, which were created during the interview.

A clear difference is seen between gentler and stronger examples of persuasion, with the first being that stronger examples are much shorter in length and function predominantly as statements. With stronger statements there is an element of casting the decision to be made as right or wrong, with the respondent promoting an outcome in this way to facilitate selling or buying. Gentler examples use longer discourse and seek more engagement with the recipient, with less definitive outcomes being promoted. While pushing towards a preferred outcome with a gentler approach, the promoted wrong choice has a lower level of criticism attached to it than the stronger choice. Importantly, the gentler approach is more inviting for recipients of the communication to engage more with product choices. Potential conflicts arising between individuals engaged in this and other discourse is discussed in the following section (5.1.5).

The act of persuasion to see the respondent's point of view is described by an MNE buyer (respondent number 13) as 'an evolving learning process' but raises the issue of whether respondents perceive themselves to be persuading through science or marketing discourse. As mentioned previously, marketing discourse is frequently argued as deceitful, whereas scientific discourse is honest and truthful. Respondents predominantly seek to position themselves as using scientific discourse to persuade other sellers and buyers, even if they are using marketing discourse. Simply, and as an SME buying/selling manager (respondent number 7) comments 'science is truthful and if we use it to speak, other scientists know we are speaking the truth'. The question thus arose, how do respondents construct discourse that they regard as scientific and will be perceived as such? Examples relating to this are shown in Table 5.5.

Respondent ID	Respondent construction of their discourse as scientific.
4. SME MD	'This is a tricky one, we need to be legit, mmm, but I try to use terms that the other guy uses. Science words! They have to be the right words though and what is expected of me. I do bio-nano so everyone arrr, expects the right words that link to nano and properly'.
8. MNE Seller	'aah, nano-chemistry this, nano-chemistry that, talk about science, it's easy! Don't talk about the five P's, you'll look like a nob! '
9. MNE Seller	'Don't use any business words, unless you're speaking to a business guy. It's science all the way! Errr, y'have to be careful though as you don't want it to look like your trying, mmm, to be a scientist. Play it natural, as you what you are, so a subtle use of science, nanotechnology language'.
11. MNE Buyer	I'm a scientist so whatever I say is scientific'.
12. MNE Buyer	'I learnt this at uni. How to speak as a scientist. Ok, well I didn't take a course in it of course. [Laughs] you know there is no how to speak like a scientist course. Ummm…anyway, we get it shoved down our throats, say it like this, say it like that .Y'learn it and pick it up and then you do it. We know when others are faking!'

Table 5.5. Respondent constructions of their discourse as scientific.

Examining the discourses in Table 5.5 respondents appear to favour using scientific terminology related to their products, where it is positioned as nano-science. Differences are noted though for whether being a scientist or scientific marketer is enough to have all spoken discourse automatically considered as

scientific. The SME MD (respondent number 4 in Table 5.5) argues that it is not enough to just use scientific terminology and that there should be a link back to nano and the correct use of terminology. This and other discourse suggests homophily as a means used by respondents to determine the validity of speakers engaged in sales. Perhaps not surprisingly, the direct use of business terminology is considered unhelpful for persuading, and particularly for legitimacy, which can be linked to heterophily, as it is outside of what appears to be culturally accepted. As an SME CTO (respondent number 3) comments, 'if a dude can't hold his techie conversation, and yaks at me in bizness yakkering, I know he's a fraud and I won't deal with him'. This suggests that such an individual engaging in business-laden discourse 'bizness yakkering' might not last long as a seller or buyer, at least if the engagement is with other scientist sellers and buyers.

Examining how terminology is perceived as right (scientific) or wrong (business or unaccepted scientific claims) is important for understanding whether a selling and/or buying event can be realised. Briefly, the use of business or unaccepted scientific claims are both criticised, but with business related comments being construed as worse by many of the respondents. This is potentially due to respondents being keen to distance themselves from marketers, although the SME MD (respondent number 1) and SME CEO (respondent number 4), discuss their use of multiple identities based on their MBAs and do not perceive a problem with the use of marketing terminology. Not surprisingly, this is linked to the audience the respondents are speaking with, and with marketing terminology being 'suitable for boardrooms' and 'good with other business guys'.

With all respondents identifying themselves as nanotechnology experts, this area is considered for what terminology facilitates or inhibits a selling-buying event. The over use of technical and/or scientific terminology is considered by most of the respondents as unnecessary, and shows the individual engaging in this practice to be functioning more as a marketer than a scientist. The SME CEO (respondent number 1) mentions this, 'you don't want to go overboard with the techie and science lingo, you just don't need it, and…and, hmmm, well y'come across like a marketer. And if you do, I'm not sure I believe what y'r saying. Either that or you are a tosser'. Relevance of terminology is seen as critical by

the same respondent who states that ‘This stuff, it’s not rocket science. I’m a scientist and I’m CEO, and I have an MBA. So when I sell or buy to a scientist well? Think about it I vary how I say things! To a nano-biologist, I use the talk from that, a nano-chemist, the talk from there, a scientist with an MBA? Bingo! Y’got it, I vary it again to reflect that’. Digging into how this works in practice the SME MD (respondent number 4) suggests that:

> ‘There are identifying tags. What, ummm, I mean is. Hmmm, ok, yes, what I mean is if we are dealing in nano, I use the word nano to identify to the other bloke that this is nano, or he does the same to me. In general chitty chat, mmm, we don’t need to go over this a million times. But, give or take we reiterate this. Actually it's like it’s coded in us, keep saying nano every x minutes! But then, as appropriate to our knowledge we get down to the nitty gritty of the science. If he keeps cocking it up, I get wary. Look, y’don’t have to be a scientist to buy from us, b’don’t lie by faking your nano, sci, or techie knowledge. We can’t trust and we certainly won’t buy from some guy doing this!’

This discourse suggests that respondents who function as scientist sellers and buyers are working to reach a co-authorship of discourse to make decisions about whether to buy or sell. Where another individuals’ discourse is unexpected and/or undesirable due to unfavourable scientific terminology, most seller respondents express a willingness to sell, but respondent buyers, not to buy. Caution in buying in such situations is linked to a concern over a lack of trust over what might be purchased, with trust in ‘correct terminology’ being pivotal to persuade buyers that the seller has an acceptable level of knowledge. The SME CFO (respondent number 5) comments on this by stating ‘If a seller is all over the place and doesn’t know his micro from his nano. No way! No way I’m buying. No idea what I’d be buying!’ This is highlighted several times by numerous respondents as a reason not to buy. An SME CTO also suggests that this is a reason not to buy from individuals ‘not grounded in science. I can’t tell what they are selling, can’t trust em. Must have a scientist to speak to, one who ermmm knows his stuff’. Considering respondent comments of the importance of

using the correct terminology and consequences of not doing so, suggests how conflicts in selling and buying can occur. Thus the following section goes on to examine 'Conflicts in Selling and Buying'.

5.1.5. Conflicts in Selling and Buying

Numerous aspects of organisational life are prone to conflicts arising, with respondents in this study focussing on the two main areas of (1) between buyers and sellers in the sales relationship, and (2) between buyers and sellers and their organisations. Throughout this study, conflict is frequently linked to discourse used, with an MNE seller (respondent number 9) giving an overview of the difficulties facing conflicts arising inside, outside and between organisations, by stating:

> 'Conflicts occur due to poor communication and people being arses. Well the first speaks for itself really, y'know someone gets the wrong end of the stick, as someone babbled something incoherent, then everyone acted on it. Then, mmm, people are just people, are having a bad day, want to change something. Being arses…get it?'

While it would make sense for poor or incoherent discourse to result in undesirable action, it can also be taken as a deliberate or unintentional tactic to sell by obfuscation, as discussed in Chapter 4, Section 4.1.4. This aspect raises questions about what might be considered poor or incoherent discourse, and whether attempts are made to rectify this with further communication. As stated previously, respondents frequently identify spoken discourse as pivotal to selling and buying but also link it to being effective to avoid conflict. Respondents frequently mention a need to engage with discourse to avoid conflict through changes in discourse given, which may be a moderating effect through sensegiving, and is discussed in greater detail in Chapter 6. Thus, discourse can be viewed as a potential source and vehicle to resolving conflict.

Looking at conflicts arising between respondents and their organisations, an MNE seller (respondent number 10) suggests that 'at some level, it's all about what we say be it in meetings, by e-mails, phone, we need to get this stuff right. Too often have I seen an unclear communication from the company say "Buy x" and when I do, it's wrong, cos they never understood what we needed'. While other respondents also claim similar experiences, the majority of respondents appear to perceive this as a learning experience that if addressed over time can facilitate relationships more conducive to selling and buying. As an SME CTO (respondent number 3) states 'isn't this life though? Y'know, getting stuff wrong! Learning fro, from it and then getting better? I'd say it is! And we have experienced this, and more importantly, I've seen it with our suppliers and buyers too!'

Examining potential conflicts within organisations, SMEs have less than ten employees, with a high similarity of individual backgrounds within each company. An example of this is the SME MD's company (respondent number 4), where he comments 'we are all much of a muchness in this company. Look we are a small science and tech company. [Shouts and laughs] ergo we are all scientists, and all bio-nano'. Further discourse from the same respondent links individual backgrounds with a similarity of terminology used by employees i.e. 'all being bio-nano means we all get what we are all saying. Makes perfect sense really'. Other SME respondents also describe their organisational discourse as comparable, and I would suggest that these organisations are predominantly homophilous for internal communication. For each SME, respondents state that all employees within the organisation have a similar scientific background, which is linked to reducing conflict and might be considered advantageous as well as an influence on marketing communication strategies. An SME CTO (respondent number 6) describes this by saying 'being on the, the same page. Mmm. This is important, and when we employ we go for guys with the right and same background as other. We need to understand each other. Employ some guy with a different background, who the hell knows what he's saying!' Looking further at how similar backgrounds can facilitate desirable and non-conflicting discourse, the SME MD (respondent number 4) states:

> ‘We all did the same type of degrees, we all have the same way of labelling stuff. We all say the same things. So, I say I need DNA dendrimers ABC with 5’-end thiol functionality, we all know what that means. We don’t waste time arguing and buying the wrong DNA functionality’.

The ability to have in depth knowledge for terminology and how it relates to scientific products appears to be important for purchasing decision-making and reducing internal conflict between organisational actors, which is discussed further in Chapter 6, Section 6.1.5. Within high technology-based SMEs, it is perhaps not surprising that similar backgrounds can be utilised as a vehicle for generating and guiding similar and homophilous discourse.

The size of MNEs means that there are much larger numbers of employees and managers who have often had more distant relationships. MNE respondents claim that their organisations potentially have up to several hundred individuals employed within them, and with varied backgrounds. One of the MNE buyers (respondent number 13) comments that ‘A company this size! Sheesh, I meet very few people! But I know what I need to do and do it. It makes me somewhat autonomous. Ok, but, and here is the thing I liaise with R&D, and they, I speak to the chaps there. We get on as, as, nnn, we have comparable backgrounds’. Using this comment as an opportunity to explore the relationship between respondents and other organisational actors, respondents were asked about this relationship. The previous respondent states:

> ‘Thank the stars some of us get each other! At least we science dudes! I get on with guys with same backgrounds as me, and part of the reason is we can understand each other. This is what studying the same subject does. Clarity! Try talking to a different type of scientist, or manager! You get nowhere. You should know this’.

Exploring this aspect further with the same respondent, a statement was given that having knowledge of the ‘same’ scientific subject is directly linked to reducing conflict i.e. ‘Ok, [Laughs] well y’got me, he studied biochemistry, and I

did molecular biology but it's close enough. We get each other, and yes this means we don't argue, well not about the work. We get each other! Put me with a physicist and you'd see problems'. This suggests that scientist identities are broken down further beyond being just the scientist, or as Ellis and Ybema (2011) describe, there are concentric circles of identification within these organisations. These aspects appear to be influenced by the use of similar claims to communicate about organisational life and scientific phenomena that enable a more harmonious relationship resulting in sensemaking. This aspect is considered in more detail in Chapter 6, in Section 6.1.1.

In comparison to SME respondents, MNE respondents construct their role in their organisation as more autonomous, with a greater level of individual decision-making. An MNE Seller (respondent number 8) expands on this by saying 'being in a large company like this [waves hands] it's expected we can get on and make decisions about what to sell. There is just too much going on to have someone babysitting us. Plus, in this company all sellers are pretty well autonomous as long as they follow their remit'. The remit seems to vary between MNEs, and for whether the respondent is buying or selling. Bluntly though, a predominant argument is made that as MNEs have a high level of resource they can always find someone to communicate effectively to a seller or buyer.

One challenge raised by all respondents is the interaction of higher management without a technical background and its involvement with selling and buying discourse. A split was noticed for how MNE and SME respondents deal with this aspect, with varying positions being taken for how to engage with non-science managers. As an MNE seller (respondent number 9) states, 'everything is fine until some manager with no techie background wants to be involved. Bungling around, confusing everyone, no clue what to say!' The difference in backgrounds appears to drive MNE respondents to promote the nanotechnology aspect of what they are doing. This is argued as being a simple task of inserting the word nano into their discourse with higher management, who are always framed as having no science background. Thus as an MNE buyer (respondent number 12) highlights:

> ‘When some noob from management comes down. It’s just a case of saying, yes of course we are buying what we need, it’s all the best quality, all the highest tech. And for example, mmm, high purity acid, well it ummm, becomes high purity nano acid! It stops the arguments, and leaves me do what I do. Simple! And they love it. The best thing is they then don’t interfere with my buying! Actually, I usually have to follow this up and e-mail them with, yes, yes, I bought the best nano product. I occasionally throw in the odd extra nano this or that by e-mail anyway, just to keep them nano-ised [Laughs]’.

This suggests a relatively simple reinforcement strategy on the part of this respondent to continually brand all products as nano, thus enabling him to act with relative autonomy. The frequent use of the word nano also links to prior discussions by the MNE respondents as a way to promote their buying and selling activities as nano-related. It must be noted however that no mention is made by any of the MNE respondents for what had or will happen if they do not use reinforcement in this way, or if problems have arisen from this approach. SME respondents claim to have no particular issue with this aspect as all members of the organisation have science backgrounds, and the nature of their organisations is much closer than the MNEs.

As well as conflict between respondents and their organisations, respondents describe conflict between buyers and sellers during the sales event. Conflict is predominantly linked to the level of and terminology used to describe the technology being bought or sold. Examining product related discourse; a continuous challenge exists for how much technical detail should be discussed during sales meetings? While simple answers or ‘enough’, ‘as much as necessary’ and ‘just don’t confuse anyone’ etc. are cited, a greater exploration is needed to understand this area more. Importantly, sales meetings between buyers and sellers are carried out by scientists, and often with a similar background and experience. While suggestive of homophilous communication, ‘attaining’ homophily is an area that is linked to conflict, and in particular where homophily is not achieved conflict is more likely. As an SME CTO (respondent number 6) states:

> ‘When we get on the same page to buy or sell, everything is cool. But it needs work, and isn’t always a given we will be. Look at it a different way, I’m chattering with a buyer. Then boom! He starts talking about something I have no idea about. I have no idea what he is saying, and I need to get him back on track’.

This suggests that even where homophilous communication is achieved, it is not guaranteed that it will be maintained. In other words, homophilous/heterophilous communication is in a continued state of flux, and while on a macroscale may be orientated towards homophily, microscale movements into heterophily may occur. Importantly though, and methodologically, no direct sales discourse is available to verify the comments made by this respondent. Looking more at the comment by the previously mentioned respondent (number 6), it can be questioned, how discourse is moved back to a more favourable area when problems occur? Several comments suggest how this is achieved when minor fluctuations into poorly understood discourse occur, and how to bring the discourse back to being understood. This is often through simple statements such as ‘I don’t understand’, ‘can you say it a different way’, ‘can you simplify what you just said?’ and ‘please help me understand what you are saying’. These statements are supportive of further requests to gain an understanding of previously discussed technical aspects that have been poorly understood. More than this though, they are not critical of the speaker, and as the SME CEO argues ‘If I attack the guy, where’s that gonna lead? To trouble that’s where!’ It is suggested that should homophily be attained again, most sellers and buyers will show an eagerness to continue towards the initial goal of selling or buying. This is highlighted by the SME buying/selling manager (respondent number 2) who says ‘what am I to say and do? Cry over not understanding? I’m a big boy, lets move on and do the deal’. A failure of the respondent to make sense of a second communication on the same subject is discussed more fully in Chapter 6 alongside the depth of technical terminology used throughout selling and buying, particularly for giving and making sense about products.

5.2. Summary

This chapter examined the findings and analysis from sellers and buyers operating at the isthmus between buying and selling organisations. Major themes have been drawn out for respondent constructions of their role identities as sellers and buyers, and are considered alongside products bought and sold. Highlighted throughout this section is the view that 'only' high technology products are bought and sold, which is communicated through spoken discourse as a way to persuade others about the value of these products. Alongside these aspects is a further examination of how conflicts can be avoided to aid in sales. Throughout these sections, closeness between themes is often observed and all occurring through respondent discussions of their experiences as sellers and buyers.

As a starting point, the size and resources of an organisation appears to predicate whether respondents function as part of a pool of many sellers and buyers, each with argued fit-for-purpose knowledge sets (chemists and biologists etc.) or as a lone seller-buyer. With proportionally lower resources, SMEs are shown to have one individual carrying out both selling and buying, which limits the knowledge available to the SMEs to that residing with this one individual. With larger resources, MNEs are able to select sellers and buyers with different and preferred sets of knowledge to engage with SME based seller-buyers. For example, if an SME seller or buyer were a biologist, an MNE would send a seller or buyer with a background in biology. Due to a lower level of resource, SMEs are not able to carry this out, utilising their one seller-buyer in all instances. This results in a greater flexibility on the part of MNEs to not only access greater levels of knowledge but also a wider variety of discourse through these individuals. Thus MNEs take a more active role to bridge a perceived discourse gap between organisations, by being able to send sellers or buyers with similar scientific backgrounds to SME sellers-buyers. Importantly, the area of scientific knowledge appears to be the only criterion guiding the decision over which particular MNE seller or buyer to utilise with the goal of both SME and MNE organisations being to develop a long-term relationship through the buyer, seller and seller-buyer.

Pivotally, all organisations state that they sell nanotechnology products, which is linked to organisational perceptions that nanotechnology is a desirable and elite collection of products, which can be used to highlight the high technology nature of their activities. There is also the potential to promote the elite nature of high technology to suggest it is beyond the capability of competitors. As part of this process, all respondents report promoting the brand of 'nano' in all selling and buying activities, which can be coupled with general organisational promotional discourse of being 'nano' companies. Importantly, not all products sold are scientifically regarded as nanotechnology products, although they are promoted as such. While this suggests a duplicitous communication strategy, all respondents claim that this does not influence the selling-buying interaction as sellers and buyers know the 'game' and see this as a promotional activity. However, MNE respondents report that they typically use the word nano in many of their buying communications with their organisations, and particularly to non-scientists to reinforce the organisational perception that all products are within the arena of nanotechnology.

The use of the term nano as a promotional practice highlights the need to understand how marketing communication is used in the selling-buying interaction for complex and opaque high-technology products. Communication in this sales interaction is referred to as spoken and face-to-face by all respondents, with limited use of other communication such as e-mail. This links to a need to engage with challenging scientific concepts for products that necessitate an ability to be reflexive on the part of both buyers and sellers. The choice of how much of the technology to discuss is generally described as being an iterative learning process, where respondents use trial-and-error as part of a learning process to understand what to say, so as not to confuse other buyers and sellers. Perhaps not surprisingly, face-to-face discourse is favoured for dealing with technical complexity and is argued as predominantly 'natural', with a distrust of 'canned' material as something that a marketer will use to deceive. This led to an examination of the difference in the way that respondents perceive communication from scientists and marketers. Briefly, this shows a propensity for the respondents to label themselves as truthful scientists and to portray marketers as deceitful, even though the respondents all acknowledge that they

engage in some form of marketing of science, which they refer to as 'scientific marketing'. Scientific marketing is framed as more truthful as it is based in scientific discourse, and using scientific terms. This is opposed to marketing discourse, which is perceived as a powerful tool to sell but ultimately only having short-term value as it deceitful. Deception is linked to terms from marketing, and it appears that a respondent can engage in scientific marketing as long as it avoids marketing terms.

Respondents claim that selling and buying is part of their ability to persuade another individual. Persuasion is argued as being able to show another individual the speaker's point of view, while orientating them towards a desired goal. This act of orientation and persuasion is split into gentle and stronger persuasion, where gentle persuasion is described as being more truthful and engaging with the physicality of a product. Stronger persuasion is stated as being a more obvious push towards facilitating buying or selling, and being more decoupled from the physicality of a product. All respondents claim that they prefer softer persuasion as it facilitates longer-term relationships and is more beneficial to selling and buying. Addressing whether stronger persuasion techniques are used to buy or sell, respondents discuss unease with this practice due to their perception that it is detrimental to longer-term selling and buying.

As might be expected in selling and buying high-technology products, where there is often a necessity to engage in discussions regarding the technical aspects of the products, conflicts in selling and buying can occur. This is directly linked to homophily/heterophily, with homophily being desirable for reducing conflict, which can damage the ability to buy or sell, and create problems for organisational relationships. Respondents commonly state that all relationships start off more orientated towards heterophily and that over time, and with a reflexive approach homophily can be achieved. However, this is described as a relative achievement as even within a conversation characterised as homophilous, it is better to see it as predominantly homophilous, but oscillating into minor heterophily. Where heterophily is observed, respondents claim that discourse is altered to refocus towards homophily. The next chapter explores this aspect in

much greater detail for how individuals give and make sense, in sensegiving and sensemaking.

Chapter 6. Findings and Analysis III: Sensegiving and Sensemaking

6.1. Introduction

This chapter focuses on understanding how respondents claim to use discourse to give and make sense of nanotechnology products in sales meetings, potentially leading to a choice to buy or reject products. The main chapter theme is sensegiving and sensemaking, achieved through discursive product simplification, and drawing on popular cultural references to facilitate sense through linguistic tools. How these aspects induce or hinder sense given and made in relation to respondent perspectives of decision-making is unpicked. As part of this process, Table 6.1 highlights the main themes derived from respondent discourses used to guide this chapter.

Themes	Demonstrative respondent discourse
Talk solves problems	'We need to talk, it's the only way to understand the messiness and complexity of what we are all doing'.
Certainty through science	'Science is the only way, the only way to make sense of things! It gives certainty!'
Technical words offer truth	'All that matters are science words. They are the only true words! Unlike business words which lie'.
Storytelling	'Nanomaterial products are a panacea and heal us'.
Narrative	'Nano is the way to kill the enemy, kill the cancer, heal…the body, and take us back to health'.
Metaphor	'Nano therapeutics let us carpet bomb the enemy with laser guided precision'.
Reflexive process	'Buying and selling makes me want to understand more about the processes, reconsider what I think I know. It forces introspection and is a way to reimagine my world'.

Table 6.1. Sensegiving and sensemaking themes and discourses.

The first section, which forms a foundation of knowledge in this chapter, is sensegiving and sensemaking.

6.1.1. Sensegiving and Sensemaking

Multiple discourses continually expose individuals to a continuous stream of sensemaking opportunities to reconstruct the way that organisational life is viewed and interacted with. For sellers and buyers who exist at the isthmus between organisations, there is the opportunity to be influenced by and also influence others through discourse. A different way of explaining this is that individuals who engage in selling and buying activities are not passive actors but are 'practical authors' (Shotter & Cunliffe, 2003) engaging in writing their organisational stories, where they give sense to others through discourse, and must make sense of both their own and incoming discourse. These sensemaking acts are generally not singular, and while it is possible for a simple approach to occur where one individual gives sense to another, and sense is made, it is unlikely. This is due to organisational life and discourse often being more complex, with this aspect being expanded upon throughout this chapter. Thus, a simple transactional approach to discourse and sensegiving/sensemaking is predominantly rejected in this study, as being overly simplistic. The data suggests that a more encompassing approach to capture the complexity of respondent discourse is required, and has been shown through the use of discourse analysis. This was aided through the use of openness on my part to look for more fluid and complex discourse-based interchanges reported by respondents that could be linked to sensegiving/sensemaking.

Throughout this study, all respondents self-identify as working within nanotechnology companies, creating an opportunity to explore the use of discourse that can be linked to sensemaking for nanotechnology products. As a starting point, all respondents state that the use of discourse is pivotal for buying and selling activities. Frequent references are made for discourse to be clear and understandable. For example an SME CTO (respondent number 3) comments, 'if the other guy gets it, he's more likely to buy'. This found agreement with the SME CFO (respondent number 5), who argues that 'I need to make sure, the other fella understands me, otherwise I won't buy. Who knows what I'd get!' More of an overview is described by an MNE seller (respondent number 10) 'it's all pretty simple y'know. People buy and sell when things make, make sense! Of

course there are other stuff, things, such as wanting and needing the product in the first place'.

To more fully understand the phenomenon of the experience of sensegiving/sensemaking, an attempt is made to understand how respondents perceive and construct sensegiving and sensemaking. Importantly, and not necessarily surprising is that no respondent had come across the terms sensemaking or sensegiving before, but in all discourse leading up to this area of investigation, all respondents routinely discussed making sense and communicating sense. This necessitated an in depth examination of what making and giving sense means to respondents, which can potentially be linked to theoretical notions of sensemaking and sensegiving respectively. This is a subjective decision on my part, where respondent discourse is used to further inform this decision. To aid in this task, the seven-sensemaking properties of sensemaking are considered against any respondent discussions of making sense. Examples of discourse relating to sense being made are shown in Table 6.2.

Seven Sensemaking Properties	Respondent ID	Example Respondent Discourses
1. Identity	12. MNE Buyer	'When he says that about that product, mmm, it makes me question myself, and my knowledge!' 'This is a nano product, and I'm a scientist…we go together, mmm, we mirror each other'.
2. Retrospection	7. SME Buying/Selling Manager	'This product, well I have to, to think back about what happened last time'. 'He says to me that it is like doing A-level chemistry, and y'know what, I think back to being younger, in the lab and I get him'.
3. Enactment	8. MNE Seller	'The description, mmm, umm, it has to be the same as I say it, it's my story after all'. 'I'm telling the story about this product!'
4. Sensemaking as a social activity	1. SME CEO	'It has to be described as a nano product, it's what we do and we must reflect this'. 'We come together to promote the nano element'.
5. Sensemaking is on going	5. SME CFO	'This is a learning process, continued learning! I see, I think, I learn, and round it goes'. 'Endless reinterpretations of a product…is what I do…is what he does'.
6. Extracting cues	4. SME MD	'Hmmm, how you describe the product is of the utmost importance. Say it right and link it to what, I, I already know and you got a deal Say the wrong thing, and mmm, I'm going to have to think about it'. 'The right word he buys, the wrong word, he flips out and gets all confused'.
7. Favouring plausibility over accuracy	10. MNE Buyer	'I prefer what I prefer. Life should be simple, especially mine. So help me what your product, no need to be perfect, just let me see what it is for what we need! Don't bang on forever about minutiae'. 'At the end of if all. What does any of this mean? I mean, everything is a distortion, otherwise I'd turn up with a bazillion graphs, charts and we'd get nowhere'.

Table 6.2. Seven sensemaking properties with example discourses.

Looking at Table 6.2 and considering the seven-sensemaking properties, many instances of sensemaking are suggested throughout respondent discourse. While there is an acceptance that making sense might not be the same as sensemaking,

this issue is assessed under a 'construction of reality' view, where all potential ways that an individual can alter their construction and perception of their world might be considered sensemaking. This approach is limited to what respondents discussed and what links can be drawn between respondent discourse and the seven-sensemaking properties. Importantly, this is not a 'box-ticking' exercise, where all seven properties should be identified for sensemaking to be perceived as occurring. Arguably, any of the seven-sensemaking properties can be discussed, with a potential view that sensemaking has occurred. An example of potential sensemaking is shown by an SME CTO (respondent number 6) who states that, 'we talk and tell stories about the product! It challenges how I view myself as a seller and buyer as I'm supposed to know this, but I've never really understood it!' Examining this respondent's comment against the seven-sensemaking properties, it suggests a challenge to the respondent's identity (property 1), where the respondent engages in retrospective thinking (property 2), as well as enactment (property 3) through a social activity i.e. discourse (property 4) in the interview. Specifically, the following aspects of respondent discourse is linked to the four sensemaking properties: 'It challenges how I view myself' (property 1), 'but I've never really understood it' (property 2), 'tell stories about the product' (property 3), and 'we talk' (property 4). Thus at least four of the seven-sensemaking properties are engaged with in this brief respondent statement. Determining which sensemaking property is used by a respondent takes great care, with numerous and repeated examinations being required for different meanings that the respondent has potentially intended.

A frequently mentioned challenge faced by respondents is their ability to either make or communicate sense about nanotechnology products within seller-buyer meetings. The influence of external actors and environmental influences can be linked to this challenge and are discussed later in this section. Looking first at the challenge of making and giving sense in seller-buyer meetings, respondents commonly argue that the level of sense given or made can vary, often depending on the perceived importance of buying and selling to different individuals. For example, where a buyer or seller attaches limited importance to a product being bought or sold, little attention is given to conveying and making sense. As the SME CEO states 'sometimes we just need to buy something, and we don't really

care what. Usually fulfilling some regulatory nonsense'. As a consequence, it appears that the buyer will not need to engage with understanding many of the product technical capabilities. An MNE seller (respondent number 8) expands on this by stating:

> 'It just blows ma mind! It really does! Sometimes a buyer has come to buy something, anything from me ok, it's a rarity of course but it happens. So will meet and he just wants something, mmm, anything that sounds about right. It [laughs] this is where there's a conflict in their company. Some arse wants to buy something that nobody else agrees, mmm, yeah that's right, nobody else agrees with. So their buyer comes and buys something pointless but sounds about right [laughs]. Hey! It's their money, and their buyer always says what a waste of time it is. Rarely happens though!'

An SME CTO (respondent number 3) also describes a similar event from his perspective as a buyer, where he comments, 'every once in a blue moon, I buy something or other that looks about right. To be honest, I don't need to understand it. Just need to buy it. Keeps our reg commitments!' The same respondent further state 'all I want is something that comes in a box, has a name, and how it works isn't important, so, so, who really cares?' In what are described as rare instances, the ability to make sense of a product on the part of the buyer or seller appears to have limited importance, other than for regulatory compliance. The nature of this aspect is not expanded on further, but with the exception that in each case, there is a prerequisite that the word nano be used to promote the product identity as within the arena of nanotechnology. As an MNE seller (respondent number 10) claims 'if someone is buying for the sake of some reggie compliance, I get told, say it's nano, say it's nano'. Coupled with buying and selling based on perceived regulatory compliance, this suggests that there is a general promotion of the nanotechnology aspect of products being bought and sold throughout sales. This appears to be linked to other discourse that promotes the value of nano where comments were made including 'just buy something nano', 'we need something nanoscale' and 'some of that good ol' nano'.

In the majority of described cases however, a deeper understanding of product physicality and facilitated by discourse is perceived as vitally important by respondents. Products requiring understanding are described by the SME MD (respondent number 4) as 'pretty much everything we use really! They feed our R&D, manufacture, everything!' As an SME buying/selling manager states 'how can we ummm, use what we can't understand? We can't can we'. This is coupled with sellers arguing that they need to be informed about what knowledge they need to have for a sales meeting. An MNE Seller (respondent number 10) expands on this by saying 'Mmm, there seems, seems, t'be an idea floating around that we know everything. But we can't can we? I mean, me as a seller! If you want to talk about a standard product, yup sure, ask away. If y'want t'talk about something new, something out there, I may need to read up on it and check we can do it'.

The complexity of products sold is argued as being compounded by all companies selling and buying 'off-the-shelf' and bespoke products. Digging deeper into this aspect for how this influences seller discourse, an MNE seller (respondent number 8) states 'we sell it already? Easy peasy! We don't and you want something new, yeah we can probably do it. But don't expect me to be Mr Knowledge about it as soon as you mention it!' A paucity of knowledge for bespoke products raised the question of what discourse will be used. Importantly, all three MNE sellers claim that they felt under no obligation to be able to discuss new and bespoke products if it is outside of their current knowledge set. One of the MNE sellers (respondent number 10) comments, 'See, if I don't know, I'm gonna say it. And come back later to discuss it! You can have an answer if you push, but I'll tell you that it won't be ammm, a good one'. Coupled with this, SME respondents (numbers 1, 2 and 7) state their preference for a buyer to come back with knowledge, and as the SME CEO (respondent number 1) claims 'you don't know what the new product is, go read and discuss it and come back, as we'd rather have an informed opinion'. Similar opinions are expressed by MNE buyers with an MNE buyer (respondent number 13) saying 'new products require time, what to say about them! Lets not rush things'.

Beyond sense being given and made between sellers and buyers, other organisational influences are discussed for their influence on respondent sensegiving and sensemaking. This is claimed to be limited in comparison to direct sensegiving and sensemaking between sellers and buyers, but it is acknowledged that almost anyone or anything could influence sensegiving or sensemaking. This is highlighted by the SME CFO (respondent number 5) who states 'Let's be honest here. Dreams, books, sexy babes! All can influence the way I say things and make sense of my world. Yes, when I sell or buy I'm hit harder by what the other guy says, but I can't discount life from the equation'. This suggests a background of general distortive sense effects from numerous sources influencing the way that individuals engage in buying and selling. These aspects are directly examined in sections 6.1.2 to 6.1.4 for how respondents claim that their sensegiving and sensemaking is influenced. Finally, how these aspects are translated into decision-making for whether to purchase or reject a product is considered in section 6.1.5.

After discussing the foundationary aspects of sensegiving and sensemaking in this section, the next section goes onto consider making and communicating sense in a sea of discourse.

6.1.2. Making and Communicating Sense in a Sea of Discourse

There is the potential for discourses from within and outside of an organisation to influence the way that buyers and sellers make and give sense, and is a commonly discussed theme throughout this study. Looking more at this, respondents describe what can be likened to traversing a sea of discourse (Searle, 2010) outside of their dyadic relationship, which shapes and defines their organisational realities and nanotechnology sensemaking, but has to be navigated to purchase and sell successfully. The question driving how respondents engage with this aspect is 'what is your perception of spoken communication as a method of making sense about products?' Respondents indicate that they are subject to a variety of discourses from a number of sources, internal and external to their organisations often discussed through discursive claims. SME CEO

(respondent number 1) states that ‘it doesn’t matter who you are in this business, and what your position; you are always swamped with chatter. It’s everywhere!’ A predominant challenge appears to be the varying ways that different individuals use nanotechnology words, which confuse their meanings. The word nano for example is split into (1) a scientific approach where it is linked to products at the nanoscale and (2) numerous other meanings. Commenting on this aspect, the SME CFO (respondent number 5) argues ‘for me nano is y’know a ten million times smaller than a metre. Any other nano is unscientific’. This approach finds favour with other respondents who prefer a simple split, where the scientific approach based on size is argued as correct, and anything else as unscientific and wrong. The SME MD (respondent number 4) highlights this by saying ‘It's the Animal Farm of Nano! Less than one hundred million good, anything else bad’. This approach of framing size related nanotechnology as good, and all other constructions as bad is prevalent throughout respondent discourse and is highlighted through linguistic tool metaphors drawing on cultural resources as shown in Appendix G.

Expanding on the confusion, SME CTO (respondent number 6) questions ‘must everyone mean something different when they say nano? It's a frigging nightmare!’ The complaint by such respondents is that there is ‘too much varied and confusing’ discourse about nanotechnology. As the SME MD (respondent number 4) comments ‘you must know that every man and his bloody dog has an opinion on nano, and every opinion is different. The problems! Just the problems this can cause!’ All respondents discuss how they perceive this created confusion in selling and buying as well as in their organisational lives. An MNE seller (respondent number 8) claims that, ‘it is a flood of yattering about nano! We are deluged by it, y’can’t turn on the radio, television, newspaper, and everyone is talking about it. I have to compete against this when selling’. This suggests that all selling and buying as well as organisational discourse is potentially influenced by wider constructed and communicated meanings about nanotechnology, often from outside of their organisations. Importantly, the question is thus raised for how much influence this discourse has on buying and selling discourse as well as sensemaking?

Examining how respondents perceive the influence of discourse outside of their buyer-seller relationships, respondents cite concern about the way that nanotechnology is discussed in a non-scientific way. Specifically, respondents frame such discourse as a collection of master narratives where nanotechnology appears as good and bad at the same time. An MNE buyer (respondent number 12) argues that, 'It's completely nuts, nano is apparently good and bad, for the same product! It's Orwellian! Makes no sense! But that is how the media describes it'. Several of the respondents present unease with how they perceive media communication about nanotechnology and also consider it to be outside of the way that scientific discourse should be communicated. Discussing this aspect, the SME MD comments that 't'be honest, we all know what we say in science isn't one hundred percent perfect. We do what we do for clarity, and not to mislead, unlike those arses in the press'. The most frequent argument from respondents is that the media acts to polarise nanotechnology, which can create difficulties for selling and buying and discourses used. Examples of perceived distortive discourse from the media is shown in Table 6.3.

Respondent ID	Promoted good media discourse by respondent	Promoted bad media discourse by respondent
3. SME CTO	'Nanotechnology cures cancer!'	'Nanotechnology causes cancer!'
8. MNE Seller	'Global warming will be stopped by nanoparticles'.	'Carbon nanotubes are like asbestos, ban em!'
10. MNE Seller	'Nanofilters will give third world, clean water tomorrow!'	'Nano may give you clean water, but it'll kill you in the long-term'.
11. MNE Buyer	'We can save the world with nano'.	'Nano is the greatest threat facing the world'.

Table 6.3. Respondent perceptions of distortive media discourses.

It appears that there is a difference in how and where these arguments impact the respondents. For example, buying and selling carried out between scientist seller-buyers is stated as being primarily untouched by conflicting discourse. This is argued by the SME CEO (respondent number 1), who states, 'a good scientist can sift through this junk from the press and real science'. Concerns are however shown for the influence that such communication may have on non-scientists in the B2B supply chain, as the MNE seller (respondent number 9) comments, 'well

we are pretty fine here as long as we keep everyone away from this stuff, fuck knows what they'd make of nano curing all that ails ya!' SME respondents show less concern about this issue that appears to be based on respondent companies only employing individuals with scientific backgrounds. As the SME MD (respondent number 4) argues, 'who the hell is gonna believe what some fool in the press or some film says?' While suggestive that the impact from communications outside of the organisation might be minimal, the SME CEO (respondent number 1) claimed, 'There's a continued battle from outside communications, always, and I mean always with a potential to disrupt what we do'. The same respondent goes on to elaborate on this aspect by saying, 'same nonsense from the media, thank goodness we are all trained to discern the wheat from the chaff. But don't ummm, get this wrong sir; we have to deal with the fall out this'. An MNE seller (respondent number 9) comments that 'mmm, always the danger that somebody somewhere listens to this twaddle and reacts accordingly, and I mean badly!' This suggests that respondents are most concerned about non-scientists being influenced by what respondents consider unscientific discourse. Most respondents argue that polar arguments about science challenge the legitimacy and primacy of scientists to speak about and know the world. This is frequently argued using the example of conflicting scientific peer-reviewed journals, showcasing scientific opinions as being varied and opposing. As an SME buying/selling manager comments 'Hmph, two scientific papers, probably bad ones, being used to say nano is perfect and evil. Fuck, we as a community have a problem. Which one to fucking believe?' This can potentially be linked to creating a sensemaking challenge for recipients of these communications, and a challenge for which version of product reality to imbibe.

An important question arising in the case of conflicting wider discourse is how to construct selling and buying discourse against this backdrop, where multiple versions of product reality are being highlighted. A consensus appears to be that in such situations, science has been 'tainted' by the media, necessitating the promotion of claims from a different source, such as a quasi-scientific discipline, to restore faith. An example of this is discussed by the SME CFO (respondent number 6) who states 'in these events, you can't use science, but I can be cheeky

and move to medical claims. For some reason, if science is temp, temporarily tainted, other areas aren't [shrugs shoulders] go figure'. Exploring this aspect further leads the same respondent to further elaborate:

> 'In science I'd say summit like, the efficacy is ninety nine percent for denaturing viruses, but medically, I'd say, medical trials and medical doctors have shown this to be an excellent product for killing viruses. You can trust a med doctor. So legiting sci through medicine'.

In this example, medicine is constructed as being similar to science but untainted, where it can make similar claims about a product, apparently without the need to engage with conflicting discourse from the media. Importantly the trusted identity of medicine is thus positioned as being a vehicle to promote the product as effective and to frame the product through the narrative/story of medical doctors as being trustworthy. It appears that in such cases respondents will promote the identity of another perceived trusted source, but only where they feel that their normal integrity to speak has been challenged, in a way that would not quickly be readdressed. A final comment on this aspect by the same respondent states:

> 'I'm a bit uncomfortable about this! Y'know, describing science using non-science. Get me? I know it works, but it just seems a bit of a fabrication. Mmm, at the end of it, we all know why we do it, even the buyer and it makes sense to all of us to do it'.

With all respondents identifying as scientists, they are keen to argue the limited influence that wider discourses have on them, although as explored throughout this section, this can vary. As an MNE seller (respondent 8) suggests 'we know what nano is and aren't influenced by films and books or not muc, much. As a scientist I'm not as influenced by TV's view on nano, unlike the business managers here! They watch too much TV last night and were enthralled with nano that will save or kill us!' In cases where unscientific questions are asked from inside or outside of their organisations, an MNE seller (respondent number

10) comments, ‘the important thing is to quickly shut their ideas down, and re-orientate them towards our scientific view’. The same respondent states:

> ‘There is no real right or wrong technical answer. I just want to subvert them back to my version of science fact, or anything away from their fanciful ideas. I try to get them talking about what products physically exist that we can sell. We can’t sell fantasy’.

The same respondent gave the following suggestions for how he would do this, saying ‘I tell people that their idea is sci-fi and it can’t be made, mmm’. One MNE buyer (respondent number 13) states that his word was not always enough to convince a non-scientist about perceived flaws in the nature of used discourse they had encountered. In difficult instances the value of drawing on another organisation to validate respondent discourse is also discussed. In this example, the same respondent (number 13) says:

> ‘Someone has just watched Terminator 3! For fucks sake, and now he wants mythical nano! Doesn’t exist! I can argue it, but If I get someone else respected to confirm what I say, jobs a good un’.

It appears that media based communication is perceived as creating challenges for the legitimacy of respondent discourses inside and outside of their organisations, where communicated science facts can be confused with science fiction. More than this though, respondent discourses are argued as conflicting with popular media for what can be achieved with nanotechnology. Importantly, both SME sellers and MNE buyers suggest this to be a process/game where they do not always challenge the ‘magnificent’ perceptions of what is real or possible with nanotechnology. As an MNE seller (respondent number 9) argues ‘I never want to challenge the wonder and awe of nano. The magical image has to stay, but obviously we can’t buy such products, scientists know this, non-scientists don’t! I have to convert them that nano is the only game in town.’

The background of the individual seems of pivotal importance to the respondents for whether wider nanotechnology discourse should be regarded as problematic.

The ability to discern good and bad nanotechnology discourse is framed by respondents as being linked to their knowledge of science and from being 'in the know'. As An SME CTO (respondent number 3) comments 'In the scheme o' things, we are pretty lucky, top heavy with scientists and the right sort'. A further statement by the same respondent says, '[Laughs] that BS nanotech nonsense is like water off a ducks back for us'. For all of the respondent promotions of not being influenced by unscientific discourse, each respondent states that there is a possibility that they have been and might be influenced by non-science discourse on nanotechnology. This contradicts many of their other statements, but appears to acknowledge the unknown influence of discourse and difficulty in measuring this aspect. The SME CEO (respondent number 1) expands on this by saying:

> 'People think, no, everyone thinks a scientist knows everything. Utter tosh! Complete, and I mean, complete nonsense… Am I influenced by what non-scientists say, well as a scientist I try not to be, I probably am though. Maybe I don't even know?'

This statement indicates the difficulty for buyers and sellers to know at what level, if any, they are influenced by surrounding discourse and organisational and life events. However, several of the respondents state on numerous occasions that they are reflexive about wider discourses they have encountered, and that, where possible, it is contextualised against currently held knowledge. An SME buying/selling manager (respondent number 7) states 'I get new info every day, but at the end of the day, I have to weigh everything up, and what, what goes well with my techie knowledge is ok. If it isn't science enough, I reject it'. For this and other respondents, the issue of reflexivity is used through what is described as a scientific lens, via a test. This test functions to consider whether new discourse should be assimilated, based on whether it meets respondent criteria of being science, or rejected if not. This suggests an individual level of sensemaking being driven by day-to-day discourse, where decisions are made for selecting a desired view of the world. The aspect of assimilating more challenging knowledge is explored in the following sections of '6.1.3. Simplifying Communication' and '6.1.4. Linguistic Tools'.

Drawing this section to a close, numerous aspects have been considered for the way that respondents make and give sense in a sea of discourse from a myriad of discourse sources. It is shown how respondents must be active participants in sensegiving and sensemaking to moderate unplanned discourse, particularly from the media. In the next section, the pivotal aspect of simplifying product discourse is explored to further understand how plausibility is favoured over accuracy for nanotechnology-based discourse.

6.1.3. Simplifying Product Reality Through Discourse

Understanding how people engage in discourse related sensemaking in complex and opaque environments is an important area and as such receives much attention from marketing academics (French and Funke, 1995). In this study, product-functionality based discourse regarding nanotechnology is discussed by respondents as creating sensemaking challenges for the way that product realities are socially constructed through discourse and discussed in seller-buyer relationships. This section therefore sets out to examine and consider the way products are discussed, coupled with what product reality is communicated (sensegiving) and what is received and constructed (sensemaking).

Although this study does not directly seek to understand how digital and branding related discourse are simplified for nanotechnology products, this aspect is discussed by respondents, and as such is considered in this section. Considering the minor theme of digital communication first, which also suggests the use of nano branding, respondents argue that it is pivotal for either setting up a sales meeting or confirming spoken discourse uttered in a sales meeting. As an MNE buying/selling manager (respondent number 7) suggests:

> ‘Of course we have a meeting and I bounce an e-mail over to set it up! It doesn’t end there, though, oh no. As one might expect, we need a paper and audit trail, trail, of what we said you know? So the e-mail does that! It gives details of what is needed, y’know product x at y percentage, but we always claim it as nano product x at y percentage’.

Thus it appears that as well as setting up opportunities for sales meetings and confirming content, respondents frequently state the use of the word nano as pivotal for highlighting products being discussed to highlight them as being legitimate nanotechnology. The SME MD (respondent number 4) comments on this by saying, 'Mmm, yeah, all e-mails reflect we buy and sell nano. Last thing, I, we need is some manager somewhere getting confused and saying "shouldn't this be a nano product?" so we label everything as nano'. This promotional aspect of positioning a nano identity for products bought and sold, is further discussed by an MNE buyer (respondent number 13) who states, 'the nano claim has to go somewhere! On the e-mail title, before the product name, or say that it is nano. Don't want no confusion by other boobs who don't get it in their company'. Consequently, the insertion of nano suggests a simple way to communicate the nanotechnology aspect of a product to any other potential reader of an e-mail or order. A further comment was made by the SME CEO (respondent number 1) who claims that 'Just throwing nano in there, you don't even have to think about it, just accept it', suggests a potential route to minimise sensemaking, where a simple view can be accepted.

Respondents also link the use of the word nano to being able to present a simpler view of product descriptions. This is discussed by an SME seller (respondent number 10) who states 'confirming is important, for what we agreed that is! But it has to make sense. Let me give you an example. I send an e-mail for what we want. Which is clarity so instead of complex descriptions I say nano plus whatever the product is. Make sense?' Exploring this further, the simplification is described by the same respondent 'as a mathematical formula, where simplification equals abbreviated nanotechnology to nano, plus a simplified product name. In effect, simplification equals "nano" plus simplified product name'. Although only discussed briefly, a similar strategy is argued for product labelling, where the use of the word nano is argued as pivotal, particularly with a simplified version of the product name. An SME CTO (respondent number 6) claims that 'there is a similar stance for labelling our prods, all B2B so light on funk. Make the claim and say it is nano and then, then, then the product name. But simple of course'. This suggests that the use of the word nano is important

for respondents and their organisations to claim a product as being within the remit of nanotechnology.

Looking in more detail at how the term nano can be used by different respondents, all respondents claim a preference for nano as being scientific as commented on earlier in this section, with nano or nanotechnology predominantly being defined by size. As one MNE seller (respondent number 10) states 'we sell nano, and science nanoproducts under one hundred nanometres!' All other respondents claim that they predominantly buy and sell scientific nanotechnology products, as they are less than one hundred nanometres in size. The SME CEO (respondent number 1) explains this in greater detail:

> 'Bit of a ti, tricky area this one. There is so much debate within science about what real is, I mean real nano is. The industrial view, and our view is it a product less than one hundred nanometres. Mmm, well the entire product is bigger than one hundred nanometres, but, yeah the constituent parts that make the product is, are less than one hundred nanometres. I'm confusing things aren't I? Let me start again, nanoproducts are made of parts less than one hundred nanometres. And it is these parts that make it a nanoproduct! Something bigger than one hundred nanometres is not nano, although we do buy and sell some of them too!'

The ability to label something as scientifically nanotechnology appears to be linked to products with constituent parts less than one hundred nanometres, but causes difficulties for respondents to clarify this aspect. An expansion on this issue is made by the same respondent who states, 'there is a consensus in the nano sectors of what nano is, and we follow it. Ok, our nano is better than yours, and maybe you don't really do nano [winks] and we can erode competitor marketing with this claim, but, we have to go with the consensus in our community'. Thus it appears that while there may well be a propensity to sell and buy products within a nanoscale range, these products are linked by respondents to promotional elements to benefit their companies and themselves. An MNE

buyer (respondent number 9) expands on what he perceives as the scientific debate about nanotechnology by saying:

> 'Y've got to understand how difficult the nano argument is in sci, science. What does nano mean? Nano width? Nano length? Nano height? All? None? We'd never get anywhere so just saying nano simplifies everything, and then link it to being smaller than one hundred nanometres. Everyone accepts this, even though, umm, few challenge what it means. It lets us all get on and do though. We aren't philosophers and aren't paid to confuse the world'.

This descriptive challenge for labelling nanotechnology suggests difficulties of reaching a consensus even within science, based purely on size. While this can potentially create sensemaking problems, it can be argued that simplification and not discussing it in any depth has enabled sense to be made about a preferred view of reality. In other words, discourse is used to simplify nanotechnology as fewer than one hundred nanometres, and good enough to be accepted. This is not to suggest that respondents ignore more complex views of products, but that simpler views may be used to side-step more complex discourse.

Coupled with nanotechnology being less than one hundred nanometres is the promotion of it being an elite collection of products that have unique properties. As an SME CTO (respondent number 6) comments 'For nano, the most important things are to say that it is small, smaller than one hundred nanometres and unique due to its size. We still talk about the nitty gritty science, but at a level we both understand'. Similar comments are echoed by several other respondents, all utilising similar comments to describe nanotechnology in this way. Respondents frequently discuss the importance of framing nanotechnology as 'unique', 'with no parallel', and 'so much better than other tech' but often without saying why. This might suggest that these meta-narratives are not questioned. Beyond this aspect, it appears that these claims are used routinely and as part of the promotional identity of nanotechnology as being a superior collection of high technology products.

Throughout the discourse with respondents, it is noticeable that there seems to be a preference for respondents to use the word nano as opposed to nanotechnology. Discussing this with several respondents leads to suggestions that nano is clearer for conveying a scientific meaning for products in comparison to nanotechnology, and is thus preferable. One MNE buyer (respondent number 11) goes on to say that:

> 'Being clear is paramount, as well as not sounding like a muppet so I say nano or nanoproducts as this is clear, nano is scientific and we all know what a product is. Hah! [waves arms in the air] we have a scientifically defined product by size! Bingo! We can all get that. Nanotechnology, too Sky News for my liking, people frown on it'.

Using nano is therefore a way to avoid wider constructions that are perceived as found with nanotechnology as unscientific, which can aid in sensemaking, and to avoid potential confusion, found with nanotechnology. The use of nano thus fits with prior discourse used by respondents to promote their self-identities as scientists and discourse as scientific, with clearer meaning.

Beyond the use of nano to promote and simplify product discourse, is the need to examine how respondents engage with other aspects of product complexity, which is frequently discussed by all respondents. Even though all respondents repeatedly discuss the knowledge that their scientific backgrounds gives them, there is still concern amongst the respondents that they are not always clearly understood as buyers and sellers, resulting in missed selling and buying opportunities. SME respondents are keen to promote what they perceive as their more encompassing identities as seller-buyers, which they argue as critical to understanding the nature of both selling and buying. As an SME CTO (respondent number 3) states 'I've gotta be honest here. Selling and buying gives the best view! It's hard to match it, as I see both sides of the coin. I see both! More than a seller or buyer!' Taking a different stance, MNE respondents argue that their view is 'good enough' to understand how to communicate about products, with all respondents discussing a need to simplify the physicality of

products to aid in sensegiving and sensemaking. Examples of simplifying discourse for the physicality of products are shown in Table 6.4.

Respondent ID	Respondent simplification of scientifically perceived nanotechnology products
1. SME CEO	'Nanostructured BCC crystal silver lattice with TiO_2 adhesion layer becomes nano silver coating stuck with titanium'.
2. SME Buying/Selling Manager	'Where possible remove chemical formulae, y'can't expect everyone to work it out in their head and it embarrasses them'.
3. SME CTO	'I need to get across what it is, so we start simple and go from there, building our way, into greater complexity!'
4. SME MD	'It's a balancing act. We work together to get to where we need to be. I work on a principle of starting slow, and remove all jargon'.
5. SME CFO	'Not easy really! We need to discuss the product, but not boggle ourselves. I use assumed knowledge, so a biologist knows a cell, and a chemist an atom etc. I link what I know to these things, but not too hard and fast'.
6. SME CTO	'Many ways of saying things. Why pick the hardest? Do you want to do business? Change isotope to radioactive source!'
7. SME Buying/Selling Manager	'Buying? Selling? It's all the same. I have to be understood, and remove any media nonsense. No grey goo here'.
8. MNE Seller	'Selling is about getting my point across. I do this I sell. I need to make sense though. So NaOH becomes salt. So I say, salt, y'know NaOH. So I identify it first'.
9. MNE Seller	'Commonalities in tech talk have to be found and used. I go for universal things between the sciences. It helps us understand'.
10. MNE Seller	'Getting drawn on complex science nobody understands serves nobody. We all want nice and easy!'
11. MNE Buyer	'This isn't academia! Getting shot of the redundant confusion helps. Simple language helps you sell and me buy'.
12. MNE Buyer	'Don't talk to me about Ostwald ripening! The maths! Help! Talk to me about product stability, and if I invite, introduce Mr Ostwald'.
13. MNE Buyer	'It's about working together, continually testing what is ok to say. There are no rules! Keep working on what is ok'.

Table 6.4. Respondent simplification of nanotechnology products.

Examining Table 6.4, a variety of opinions and ways for simplifying product discourse are given by respondents. Importantly, all respondents argue that

product discourse should be simplified, at least in initial interactions over a new product. This is until an iterative understanding can be reached between sellers and buyers for the level of scientific complexity to use. From other discourse given by the respondents, it appears that setting the level of complexity is an area that is openly engaged with to facilitate selling and buying. One MNE buyer (respondent number 11) comments that 'I work with the seller and he works with me, together we reach, decide I mean, how much product complexity to engage with'. The majority of respondents prefer to frame the products using what they perceive as simpler science in initial discussions, leaving the opportunity to increase the complexity if desired. This appears to enable a stop-gate, where decisions can be made about the level of product complexity to use, with a potential to reduce the embarrassment of a seller or buyer with a lower level of knowledge. As an MNE seller (respondent number 8) states 'Techie complexity, well, mmm, we can always increase it. No need to dash in and confuse, umm, and embarrass anyone. Like that leads to sales'. No mention is made throughout respondent discourse for any attempts to deliberately promote a higher level of science or product knowledge at the expense of another buyer or seller. More than this, no respondent raised this area, with the focus being on how to 'protect' another buyer or seller from embarrassment of not knowing something, which can negatively impact on a desired sales meeting outcome.

The ability to create a more open and reflexive sales relationship through simplification is also discussed by respondents. Importantly, respondents are keen to discuss their view that there is no singular and correct view of products 'as they definitively are' but more that at some level 'everything said is a simplification' with discourse creating preferred product views. This seems to be based on a concern from respondents about the use of language to describe products, where spoken discourse is preferred in comparison to showing graphical or pictorial analysis of product physicality. Discussing this further, the SME MD (respondent number 4) states, 'hah! Words make me uneasy, you, you, well you just can't get to what the product is wi, with them. You need to show the specs, the graphs, the images! They show the product for what it is'. The respondent thus contradicts his earlier statement, which is often the case for respondents and how they promote the way to engage with products. Examining

the potential of using visual representation of products further with this respondent, his comment highlights the importance of spoken discourse in comparison to using images to depict a product:

> 'Ok, so, well, right so I show you a graph, ok perfect. It is what it is unlike a word. But, yeah, well you would think this would be good? But you never want to do this! It's a rod for my back and might be misunderstood, or worse! Understood, and what if they disagree with our interpretation. The deal is…someone has to interpret the graph, and it has to be us. Bloody hell! Someone else might disagree with our findings, don't give em the chance!'

Thus, while visual representation can be used to position something as 'fact', it has the potential to hold the author or promoter of this tool to account. Instead, by not using visual representation, and using spoken discourse, opportunities are created to promote fluid facts that can be reconstructed by the speaker as perceived necessary.

Finally, a general high-level of knowledge is argued as necessary within nanotechnology selling and buying, but with it not being possible to be knowledgeable about all products. This claim is particularly important for bespoke products, and as an MNE buyer (respondent number 12) states, 'who can know everything? Better to be safe as opposed to upsetting someone with presumed knowledge. Every day stuff, not too bad I guess, but anything new can be confusing and we need it dumbed down, at least in the interim'. This suggests that bespoke products are more troublesome for what discourse to use, and can be linked to a need to co-author new understood discourses for new product discussions in sales meetings. As an SME CTO (respondent number 6) states 'Regular sellin and buyin [appeared to be an American accent] it's as easy as pie! New products though, takes time to figure out what to say, I need to make sense and he needs to understand'.

Beyond simplification, several other methods of aiding sensegiving and sensemaking are frequently discussed by respondents, and are been examined in the following section of 'Linguistic Tools'.

6.1.4. Linguistic Tools

This chapter has so far explored numerous aspects of sensegiving and sensemaking related to selling and buying, and how simplification and product labelling through the word nano can be pivotal for creating a preferred product view. Beyond these aspects, is the potential use of linguistic tools, which can include analogies, comparisons, contrasts, metaphors, and narratives, amongst others, to communicate and make sense of complex products, often using references from popular culture such as the media, television and magazines etc. This section therefore explores respondent discourses to understand how linguistic tools are used to aid in sensegiving and sensemaking. Importantly, all of the linguistic tools discussed in this section have a potential to be utilised to give sense, but also for the recipient of the communication, to make sense by using such tools. For example, one speaker may use an analogy to give sense, and the recipient will make sense of this and may use another linguistic tool to communicate and check their sense made. Thus sensegiving is a discursively on-going process between individuals.

As discussed in section 6.1.2, discourse from outside of the selling-buying relationship can influence sensegiving and sensemaking in this relationship, particularly through cues taken from cultural communications. Due to the pervasive nature of explicit/implicit cultural communications, it is perhaps not surprising that respondents link sensegiving and sensemaking to aspects communicated in this way. As an SME selling/buying manager (respondent number 2) comments 'this stuff, it's, well it's everywhere, y'just can't escape it, even within our company'. A frequently cited reason by the majority of respondents for using popular culture is stated by an MNE seller (respondent number 10) as 'we all have a life out of work, and as much as tech talk is important, if we can get the message across via yapping about what we saw on

TV, I say use it'. Although the use of references from popular culture is argued as 'helpful', 'insightful', 'simplifying', and 'sometimes necessary', reasons for the relevance to sensegiving and sensemaking varied between respondents. Examples of this discourse from respondents are shown in Table 6.5.

Respondent ID	Popular Culture Examples and Relevance to Sensegiving/Sensemaking
1. SME CEO	'Whatever works, outside of tech! Sometimes we need to leave tech to describe it. But really, anything non-tech, as long as the other guy gets it. Nano is just too confusing, everyone understands the simpler stuff'.
2. SME Buying/Selling Manager	'Everyone I know in this biz loves Star Trek, so lets use it. Beam me up Mr Nanoparticle!.Star Trek makes us think of something we love, reminds us we are working towards a greater logical good. We, need this, otherwise I'd not be arsed to put any effort into buy or sell'.
3. SME CTO	'Science is so fucking dull at times! A bit of light science though, and not real science. Bit of discussing nanobots from Drexler, lightens, stimulates the brain. Of course nanobots aren't real, but it is a bridge, humour, creates awareness and receptivity to what is being said'.
4. SME MD	'Even if I can't directly link, what I'm buying or selling to sci-fi, I still use it. Do you have any idea what a tech conversation purely on tech is like? Hard! We need to build solid relationships, ummm, it's about what we say, and in this feckin biz, well y'know, we need to inspire each other, and, ummm, ourselves, and sci-fi is perfect'.
9. MNE Seller	'So I'm trying to buy some nano optics, see nano! Nothing is making sense and everything is falling apart, he is confused about the wavelength I need. So I just say, "red like Ed" I don't want to embarrass the guy so link it to Ed Milliband [laughs] his company will know what I mean by red, and we have a cheeky laugh'.
11. MNE Buyer	'I can't go on about tech. I need to find other ways to explain what a nanoparticle is like in solution. And consider I'm gettin nowhere. So I say, y'know, it's kinda like a game of pinball! Bounce that pinball around Tommy and it's fine, just like your nanoparticle'.
13. MNE Buyer	'Say I'm getting bogged down in tech regulation! I try to find a similar theme in comics. We all read them! I'm a Dredd Head, and I know the seller is too. So instead of just saying legal whatever, I do my Dredd voice and say "This is a matter of law citizen, and your compliance is required! These perp nanotubes must be regulated" [laughs]…so he knows it's a legal compliance issue and will remember it'.

Table 6.5. Popular culture in sensegiving and sensemaking.

Respondent discourse in Table 6.5 highlights a few key areas for using popular culture references to aid in sensegiving and sensemaking, including the use of SF. The importance of SF is taken directly from respondents who claim it as such, but also due to the frequency with which all respondents mentioned it. The use of SF is linked to various aspects, such as respondent preferences for the views promoted by science fiction. Although sometimes dystopian, respondents argue that the technologies 'always worked, even if abused' and that scientists are often shown as 'elite members of society' in SF. As the SME CFO (respondent number 5) comments, 'Come on now we all love sci-fi, it hands down promotes us as super knowledgeable, although sometimes morally ambiguous [laughs and pats thighs]'. The SME MD (respondent number 4) presents a simpler view saying 'I'm a scientist, he's a scientist, we're, we're sci, scientists, we don't want to talk about my little pony! Sci-fi is the closest thing to what we do, and we love it, so yeah we use it for sales'. This view is echoed by other respondents who further explain that it promotes a preferred view of the world of science being an elite discipline, and without physical flaw. This is stated by an MNE seller (respondent number 8) as 'science has its problems but we don, don't want to discuss them. We want the 1950s view of science back, and ok, maybe it's not right, but we prefer it. Or look at it a different way, even in flims, I mean films. We cock the planet up, but at some level the tech still works'. This collection of discourses is linked to respondent promotions of their identities, as an elite social group, potentially functioning to usher in a new technological future.

Coupled with SF, although not always using it, is the use of narratives and stories throughout this study, with what seemed to be a preferred use of grand narratives by respondents. The grand narrative (Lyotard, 1979) is knowledge in the form of storytelling, constructing greater narratives, where individuals co-author their stories and knowledge as legitimated. This device is utilised by all respondents throughout this study, and particularly for sensegiving and sensemaking. As an overarching comment for respondent discourse on this area, an SME CTO (respondent number 6) argues 'I just want a simple world view that is certain, like science, giv, gives, or used to [voice raising in volume] and selling and buying should be like this too! Let's go back to the view of science as right!'

Due to the frequent discussion of grand narratives by respondents, examples and the relevance to sensegiving and sensemaking are shown in Table 6.6.

Respondent ID	Grand Narrative Examples and Relevance to Sensegiving/Sensemaking
2. SME Buying/Selling Manager	'Some days, a, are hard. They just are, someone pissed someone off and now the sales meeting sucks. Really sucks, and we are grindin against each other. Usually one of us says something like "they would be a dick though, they don't know what we know, we are the real scientists" and this lets us start to move back together again. Talk more and get things going'.
4. SME MD	'When in doubt talk about the wonder of science, believe me it works. We guys can't stay mad when you do [laughs] it's like being in a special club and we need to remember, the, this at times'.
5. SME CFO	'Misunderstanding isn't just from not getting the other fellow. It can be more than this. There, loads, there are loads of things that mean I won't listen or he won't. If we can get back to respecting each other, as scientists being here to save the world, well then we can work on understanding each other again'.
8. MNE Seller	'Big ideas help, get us out of bed! T'b'honest with you, relationships work best, especially for getting some dude to buy when he believes in something big that he is a part of. If he believes his product will cure cancer, betcha life that he will get his noodle in gear and talk sense'.
11. MNE Buyer	'I need to speak to a therapist about this. Maybe I do actually some days I just don't feel up to the job, and I can be a bloody nightmare to talk to. Yeah, tis a problem [shrugs] Sellers are awesome though! So positive, always looking to the big piccy of what we can achieve .Y'know? Science is the way, we will fix these diseases. Makes me feel better, I can cope and I know I'm better at interacting. I think they know this too'.
12. MNE Buyer	'Ah, ah, lets get stuck into how fucking awesome science is! Yes, I mean I use this in sales meetings all the time. Gets us both fired up for selling and buying. It legitimises us as great guys helping the world'.

Table 6.6. Grand narratives in sensegiving and sensemaking.

Examining Table 6.6 indicates that grand narratives serve multiple purposes for respondents, particularly for legitimising self-identities as scientists. As several respondents discuss, promoting a scientist self-identity and knowledgeable about products and the wider world is cited as being capable of being eroded in organisational life, and outside of the organisation, which is perceived as

detrimental to selling and buying. The SME CEO (respondent number 1) comments that ‘as a scientist, we know we see the world the, the way it real, really is. Science lets us do this, anyone who’s not a scientist might attack our knowledge of this, and it can be an erosive and upsetting process’. Thus respondents describe a need for grand narratives to realign desired perceptions of science to reinforce their organisational identities, which can aid in selling and buying. An MNE seller (respondent number 10) describes this as ‘being helped to re-believe in what science is, and what I am as a scientist. Helps me do ma day-to-day selling. Kinda like therapy’. Examples in Table 6.6 also indicate a potential negative aspect for buyers and sellers, where alternative narratives to the supremacy of science and the scientist have to be negated by the selection of more preferred narratives. On numerous occasions, this is cited as being critical for selling and buying, and as an SME buying/selling manager states ‘tell me the story of how great it is to be a scientist, and get me ready to buy and sell’.

Looking at other linguistic tools for how sense is given and made, similes also appear to be important to respondents, where something is discursively linked to something else. Examples of predominantly scientific similes given by respondents are shown in Table 6.7, and indicate a basic level of homophilous communication between scientists.

Respondent ID	Examples of Analogies
2. SME Buying/Selling Manager	'Buying the wrong nano product will make ya feel like a nanoparticle out of a colloidal solution. So let's work on this together so you feel snug as an electron bug in appositively charged rug with this product. As after all, we are using electrostatics, and this is exactly what we are doing, give or take'.
5. SME CFO	'I remember how I was when I first saw, yeah first saw this product. It made me think! It reminded me that what we are like explorers discovering a new country every time create a new product! It is like when we laser a surface we create a new country.
8. MNE Seller	'You may well ask about this product. Kinda like being in a TARDIS, such capabilities! It couples to your surfaces, and bang! It works, amine to sulfur, and that's what you want'.
10. MNE Seller	'The chemistry is pretty simple. It is like we send your product to the moon'.
11. MNE Seller	'Ok, so I sell DNA, I could say deoxyribonucleic acid, but I don't, too long and complicated. But how does our enzyme work? That splits the two strands into singles? Aha! This is where I sneak the analogy in! I take my time, probably say "hmmm, now how do I say this" then go "ah, yes! DNA is like two long hard pieces o sphagetti stu, stuck together. Our product the enzyme, is like, a, the knife. Use it and it separates the two strands!'

Table 6.7. Analogies in sensegiving and sensemaking.

The examination of analogies shows a preference of respondents to couple analogous concepts together to create a simplified view of how products work, particularly based on scientific concepts. Thus we have the example by the MNE seller (respondent number 10) creating the image of launching a product in a similar way to a rocket, where the product will land on a nano surface (mimicking a rocket landing on the moon). The same respondent claims that 'this links a very well-known historic event and a pinnacle of scientific achievement with the buyer's product. He can instantly understand how we will do it, even if he doesn't understand how the chemistry works! Simple!' Thus according to the respondent, a visual simplification is communicated for the buyer to make sense of. Other respondent discourse appears to function in a similar way where the use of analogy creates a simple view of the way a product functions. Expanding on this aspect, the SME CTO states 'Hmph! It's a balancing act, where the communication has to make sense to both guys. No need to get bogged down in

techno whatever, for what every bloody atom is doing. An analogy though, very nice. If more info is needed, it can be given'.

Moving beyond analogy, the use of comparisons and contrasts is also favoured by respondents for a way to give sense, but also as a means for the recipient of sense given, to engage in a sensegiving/sensemaking exchange with another speaker. Examples of comparisons and contrasts are highlighted in Table 6.8.

Respondent ID	Examples of Comparisons and Contrasts
2. SME Buying/Selling Manager	'Our product is like a shield of steel, which is ironic as it is made of steel and shields surfaces from damage. We should call it Bat Fink [laughs]'.
3. SME CTO	'I says to him "d'ye remember those stylus profilers? Well if you do, we indent your surface with a nano-sized one of them"'.
5. SME CFO	'The micro particles we buy from you. We need them nanosized! Exactly the same but smaller. Understand?'
7. SME Buying/Selling Manager	'Ah well, when the, they bind to the cancer, it engulfs them like a phage'.
8. MNE Seller	'Nano products are the same as micro products. One hundred percent, right? Except smaller and better'.
11. MNE Buyer	'We need our product smaller! Everything has to stay the same, but smaller'.
12. MNE Buyer	'What we buy from you works. We want better economics though, can you nano-ise what you make? All the same, but nano?'

Table 6.8. Comparisons in sensegiving and sensemaking.

Examining Table 6.8 shows that comparisons and contrasts are often used in conjunction with each other, and with the potential of utilising other tools such as metaphor and similes. Discourse in this area appears to be linked towards explaining how nano-products work in comparison to larger scale technologies, which are possibly viewed as easier to understand. This arguably creates a simpler technological view, where an understanding of the processes of how something physically works, or is produced, is not necessarily required. As discussed by the SME CTO (respondent number 6), 'Yup, mmm, well this approach is a simplifier really, isn't it? It means you can buy without having to know everything about everything'. Importantly, and although knowledge of

products bought and sold is required as discussed throughout this chapter, there appears to be little requirement to understand the manufacturing process. Several respondents comment on this, with an SME buying/selling manager stating 'It's just not feasible to expect knowledge of manufacturing. Is generally beyond what we look at. We need to grasp it, yeah, sure, but not know it'. This suggests that a conceptual understanding may well be preferred, which can potentially be linked to making sense of processes, but without having to have an in depth knowledge.

The last linguistic tool to be considered in this section is the use of metaphor, which finds found favour in describing complex physical functions related to nanotechnology products in B2C environments (Davies, 2011). Prior to this study, the use of metaphor in B2B sensegiving/sensemaking had received scant attention, and with examples of metaphor used by respondents in this study being shown in Table 6.9.

Respondent ID	Examples of Metaphor
2. SME Buying/Selling Manager	'Nanoparticles are the smart bombs of our arsenal. You buy this and it selectively destroys that cancerous enemy'.
3. SME CTO	'We add in some single-walled nanotubes, and yup, these things are like laying the information super highway on your spine. No movement yesterday, it's coming tomorrow'.
4. SME MD	'I've got to say, colloidal nanoparticles are the warrior elite of antimicrobial products. Mmm, they really go in't battle for you'.
9. MNE Seller	'By the time we, have, we have sputtered you a nano film, it's a shield wall. Thousands of knights with their shields protecting your surface against corrosion'.
10. MNE Seller	'It's a Spartan shield baby, it gives a physical wobble when anything hits it and deflects it. Leonidas couldn't have asked f'r better'.
11. MNE Seller	'This OLED nano product, it's a terminator, and absolutely will not stop. Unless you press the stop button that is'.

Table 6.9. Metaphor in sensegiving and sensemaking.

The use of metaphors as shown in Table 6.9, highlights the link between what are predominantly militarily based images of products being discussed. Examining the use of military imagery, the SME CTO (respondent number 3) states that 'a lot of what we do is to protect against disease, so it makes sense to

use militarism to achieve this'. The use of metaphors highlights macroscale product function, with a minimal engagement with technical terminology. Claims are also simple in nature, and as the SME CTO (respondent number 3) states, 'we can always go more complicated, so short and easily understood chatter from me. Giving plenty of time for questions, I mean, we want to engage and get this right! Get the sale too! And this is the preferred route!' Although all respondents claim to use metaphor, there is some discussion about the extent that it might misrepresent science. As an SME buying/selling manager (respondent number 7) comments, 'Fuck it! Yeah, I use these things, but does it mean I'm happy? No! It distorts the science, what the product really is and all that. What am I to do though? Some scientist ey? I do what I know works, and this means using these tactics'. Coupled with this comment, is what the SME CEO (respondent number 1) argues 'we all have our hands tied. Nano is ridiculous for the terms used. Does anyone really get it? We have to do what we do and distort the science. Personally, I feel using these tricks is a bastardisation'. This again highlights the challenge described by respondents for using communication to sell and buy which they might consider a distortion of the product being bought or sold. Although respondents often discuss a communicative challenge, it appears that they rise to meet this challenge with any discursive tool available to them.

Finally, and as might be expected, the use of linguistic tools appears to be used reflexively where individuals engaging in this process have to make decisions for how well they perceive sense being communicated. As the SME MD (respondent number 4) comments, 'I, well it's a learning process. I pay attention to what I think he thinks I've said and try to pi, pick up some give aways. Does it look like he understood? Does he sound like he got it? I might need to change what I'm saying and say it again'. Although a reflexive process, all respondents claim there is no guaranteed route to making sense, with the notion of trial and error being a frequently discussed part of being understood.

After much discussion of sensegiving and sensemaking, particularly related to marketing communication, is the need to address the role of these aspects on purchasing decision-making, which is considered in the following section on 'Sense- and Decision-Making'.

6.1.5. Sense- and Decision-Making

A pivotal part of a sales meeting is the decision for whether to purchase or reject a product, or postpone the decision until a later time. Throughout this study, respondents discuss marketing communication based sensegiving and sensemaking as part of purchasing decision-making. Numerous factors are examined for influencing sense- and decision-making, particularly related to the complexity of product functionality. Where product complexity is perceived as confusing to a buyer or seller, it is argued that the likelihood of no product, or the wrong product being bought or sold is increased, which is a critical theme in this section.

As a starting point, all respondents argue that nanotechnology products are at the pinnacle of high technology not only in technological achievements, but also in the confusion that can be caused from complex functionality. As an MNE buyer (respondent number 12) comments, 'Nano is new tech, still cutting it's teeth and will take years for us to iron the kinks out of what it is, to mmm, buy the right stuff, and what to say for what we want'. Discussing the process of selling and product functionality, an MNE seller (respondent number 8) states, 'Being understood! Now there's the challenge! Bane of my life. Screw it up and you don't sell. We are still learning how to yap about the complexity of the tech. To do, to do it properly you know? Be, beyond endless simplification'. This potentially suggests that although strategies are in place, such as simplification and linguistic tools, as discussed in Section 6.1.3 and 6.1.4 respectively, there is potentially still much to learn for marketing communication related to sensegiving/sensemaking and decision-making.

Within respondent discussions for improving marketing communication, which is often described as a continuum and framed as 'scientific communication' and 'scientific marketing communication', is the promoted element that spoken discourse is pivotal for sense-based communication and purchasing decision-making. The SME CFO (respondent number 5) explains this aspect, by saying 'we need to talk, but sooner or later, a decision has t'be made to buy or not to buy? That is the question!' Discussing decision-making further, the same

respondent went on to say ‘but when, and how t’make a decision. Lots of things to ponder, and get right, it’s my arse on the line after all. I’m the fella for the chop if I get it wrong’. This suggests a potential negative consequence for what the respondent’s organisation might consider poor decision-making.

Throughout respondent discourse on decision-making, the promotion of seller and buyer identities is argued as pivotal for aiding favourable selling and buying decision-making, with respondents claiming to be ‘scientist sellers’, ‘scientist buyers’, and ‘scientist seller-buyers’. The SME CEO (respondent number 1) captured this by the statement ‘Look, I’m a scientist! But I have to buy and sell! Otherwise there is no company for me to run. Get me?’ Similar comments are made by other respondents, with an MNE seller (respondent number 10) saying ‘I’m a scientist, yes! But I sell, it's what I do. I use science to sell’. This is a common theme with respondents arguing that their knowledge as scientists help them to buy and sell, but also that their identities as scientists are necessary to secure the ‘right product’. As an SME CFO states ‘I’m like Ronseal, I do what it says on th ,the tin. I buy and sell, it’s what I do, as well as other things. Promoting myself as a scientist is an out and out necessity for this’. Examples of the links Respondents formed between their self-identities as scientists and decision-making in selling and buying is shown in Table 6.10.

Respondent ID	Linking decision-making and self-identity.
1. SME CEO	'Science is a way of life, and once you become a scientist, everything is through this way of looking at the world. My decisions are based on this view!'
2. SME Buying/Selling Manager	'Scientists want to buy from scientists'.
3. SME CTO	'Selling and buying! It's a complicated ol' game y'know. With all tha ambiguity I need to buy from another scientist'.
4. SME MD	'I ponder on this, my dual background as a scientist and business dude, educated in both. Hmph. The biz knowledge but without the sci, where would I be? Couldn't do anything ey?'
5. SME CFO	'How the fuck can anyone buy or sell without being a scientist?'
6. SME CTO	'I route my decisions through my scientist brain'.
7. SME Buying/Selling Manager	'We aren't working with tea bags! The, I mean, yes, the knowledge has to come from being a scientist'.
8. MNE Seller	'Mmmm, yeah, I know some dicks sell with no tech knowledge, but they are dicks! I fuse the science and business, it's like a scientific version of art. My decisions are rational and scientific'.
9. MNE Seller	'I couldn't sell if I wasn't a scientist, how could I understand the tech? It stops it from bein blah blah blah, to where I can understand it'.
10. MNE Seller	'I'm selling using my knowledge learnt in science. Ok, and I use some marketing too. Don't like to admit it but I do. But, but only the science is real and lets me sell'.
11. MNE Buyer	'It's my knowledge as a scientist that lets me know how to buy well'.
12. MNE Buyer	'I'm a scientist! So are you! You can't escape it, it enables us to see the world as it is. Every decision you make is as a scientist, and don't you forget it!'
13. MNE Buyer	'The eternal challenge of how to do bizness, science has a foundation that is real. So use it sez I. Let it guide what you do'.

Table 6.10. Linking self-identity and decision-making, constructed by respondents.

Examining Table 6.10, self-identification as a scientist is repeatedly cited by all respondents as being a critical part of being able to take a meaningful part in selling and buying decision-making. More than this though, the knowledge derived from academic study and having worked as a scientist is stated as being a pivotal part of respondent reasoning for being able to make sense of discussions,

particularly through knowledge obtained from being a scientist. As the SME CFO (respondent number 5) comments, 'knowledge as a scientist, makes me understand other scientists. Where'd we be without it in sales?' This can again be linked to homophilous communication, where individuals in the selling-buying relationship 'comfort' each other via cultural (scientific) cues to facilitate selling and buying decision-making.

Looking in more detail at how respondents frame their scientific knowledge to aid seller and buyer decision-making in sales; the predominant theme is towards how sense can be conveyed for technical discourse. Thus, respondents promote 'the scientist' as a facilitator and enabler of high technology selling and buying, and as an individual with expert knowledge. Potentially fitting with this theme is the promotion of decision-making as being a rational activity in the sales meeting, with an SME CTO (respondent number 3) arguing that 'scientists are always rational! And we, I, we make rational decisions, and do you know what? I promote this view too'. Rationality is linked to being able to know the complexity of the world as a scientist, and importantly make decisions while confronted with uncertainty about products. However, and while all respondents heavily promote rationality as being an important part of decision-making, much respondent discourse contradicts this view, and suggests that respondents are not always rational. Examples of respondent discourse and decision-making rationality/irrationality are shown in Table 6.11.

Respondent ID	Discourse suggesting irrational decision-making
1. SME CEO	'If I like it I buy it!'
2. SME Buying/Selling Manager	'[Laughs], since when was life rational? Like my buying and selling at times'.
3. SME CTO	'I had a choice between this and that, and I bought this cos we'd both watched Star Wars the night before. Not together o'course, and he made a joke about a light sabre and the product. So I bought it, and it was good enough for what we needed'.
4. SME MD	'How can you stop timing influencing what you choose?'
5. SME CFO	'Ok, well science is rational, and so am I. Always? No of course not'.
6. SME CTO	'Umm, let me give you an example. Meeting going great, really getting somewhere, and then bang! I say how the product will go after cancer like a motherfucker. Everything went frosty, and they bought, mmm, from a competitor for a month after. His Mum died of cancer!'
7. SME Buying/Selling Manager	'Officially I'm as homo, errr, what is it? Homo rationalus? Well anyway, I'm supposed to be rationale and to be honest I promote this. Which scientist wouldn't, but I did some cog neuro work years ago and I don't believe this'.
8. MNE Seller	'But what is rationale? Being a bot? If you mean I do what I'm supposed to do then yeah I guess I am, but sometimes, I hv, have to make financially bad decisions as it's the product remit'.
9. MNE Seller	'Anyone who really thinks it's all about me, is a noob I tells ya. There are two of us in the meeting, and we have to reach a decision toegther. We aren't calculating everything, so how is it always rational?'
10. MNE Seller	'Aha! The conflict twixt what I say and do!'
11. MNE Buyer	'I've gotta say this, I've bought numerous times on how well he's made me laugh'.
12. MNE Buyer	'I try to use my gut for what to buy, but timing can be everything!'
13. MNE Buyer	'Not an easy one. If I had the luxury of going away I'd grid it, and calculate something. But I have to go with what seems right on the day'.

Table 6.11. Respondent discourse suggesting irrational decision-making.

Examining Table 6.11 suggests that there are aspects other than rationality influencing respondent decision-making. It would appear that respondents make

decisions for whether to buy or sell in the pre-determined meeting. However, within any meeting, several potential products are often capable of being bought or sold, as commented on by an MNE buyer (respondent number 13), 'there are usually several products I could buy for anything, and sometimes all similar. I have to make a split decision in the meeting, for which one to pursue'. A similar argument is made by an MNE seller (respondent number 9) who claims that 'there is just no time to go over everything. He has to work out which one to go after, at least in our conversation. I try to help him with this'. On the basis of purchasing decisions being made in the sales meeting, sellers argue that their discourse is driven towards being conducive of this goal. The SME MD (respondent number 4) comments on this by saying 'There is only a limited amount o'time t'make a sale, so what I say has to count'. Thus it is important to understand how discourse used in this environment can be used in sensegiving and sensemaking for buying and selling.

Examining the use of discourse for sensegiving and sensemaking, respondents are keen to highlight that making sense of a product is not through a single statement from a seller to a buyer. An MNE buyer (respondent number 8) said 'How I make sense is through a state of flux! He says something, I think about it. So I say something, he thinks about it. We talk, interrupt each other, and eventually we start to get each other. It's no as simple as him walking up and saying "I've got a product" and I buy it!' This suggests that sensegiving and sensemaking is a dynamic and adaptive process, where both seller and buyer are actively involved in giving and making sense. Thus it is likely that different levels of sense are being made throughout the discourse, where an eventual point is reached for making a purchasing and selling decision. An SME buying/selling manager (respondent number 7) discusses this by saying 'My understanding often goes up and down. Yeah, on what the other guy says, and what I think of it. Can I contextualise it? And on and on this goes. Hopefully there is the eureka moment! I want to scream! Yes, yes, I bloody well get it!' Stepping beyond the notion of sense, it can be viewed that individuals in the selling-buying interaction are in a continuous process of reconstructing each other's realities until a purchasing/selling decision is made. Thus, discourse drives sensemaking through sensegiving, reconstructing seller and buyer realities until enough sense is made

for an acceptable view of a product, and if desirable a product is purchased, and if not, it is rejected.

Respondents argue that linguistic tools play an important part in the process of sense and decision-making as well as product simplification. The SME MD (respondent number 4) discusses this by stating:

> 'Isn't everything a simplification at some level? Ummm, I mean, ok, how to put this? Right, yes, no matter what we do, everything is a representation. Formulae, words, symbols all, all of them! We lie to ourselves in tech, and sci that we are giving a truthful view of the, uni, universe. Let me tell y'though we aren't. Nobody can. So selling? Buying? It's the same. Give me a bazillion equations, specs, whatever, none of it is really reality. Buy, buying, and, erm, selling is the same. I'm rambling what I'm tryin to say is that [laughs] it's like the Moby album, "everything is wrong". Some of it helps though, so within all, all, the stuff, and crap is stuff that helps us make good decisions'.

Exploring this further, a commonality is perceived between respondents, where a 'good enough' view is often enough to make a decision to reject or purchase a product. The decision to purchase or not, is framed by several of the respondents as being directly driven by the simplification of product functionality and composition, aided through elements such as SF metaphor. The SME CFO (respondent number 5) states:

> 'How I make decisions, is, well it's a complicated mess. A cacophony of me, life, mine, I mean my environment. What the other chap says. He is like a conductor, if he's good that is. He guides me along a path to understand, or not if he's no good. A detailed but simple explanation, fun, imaginative, colourful references. Make me see it, the nanoparticle blows up the bacteria, why not? All helpful! Can he do this? With help from me. Look baby, I'm not passive here. It's a two-man party'.

Or as MNE buyer (respondent number 11) claims ‘it’s like fishing, conversation being the bait and I have to wiggle the bait several times, getting him to visualise, mmm, yes visualise what I mean and then he makes a decision’. The aspect of visualising a simpler but more engaging process, such as the use of military aspects including weaponry such as ‘bombs’, ‘lasers’ and ‘explosions’ typically finds favour with the respondents. Militarism is again linked to products focusing on protecting users from diseases through ‘shielding’ or ‘attacking’. It is also simpler than engaging with more complex product functionality, and as an SME buying/selling manager (respondent number 2) states ‘leading, leading, all the way through, taking feedback from what is said, and eventually showing them what it is, where from my experience they buy if I’m selling, or get what I need if I’m buying’. Thus there is a notion of buyers and sellers engaging in a process that uses discourse as a means of co-creating favourable and simplified product knowledge to facilitate buying and selling.

Most of the respondents argue that too much information, beyond what a buyer or seller could reasonably cope with, can result in information overload and a decision not to buy or confusion over what to sell. This is perceived as a particularly acute problem for nanotechnology and high technology in general. The SME CEO comments that ‘how much info to give and not too quick is always a major fucking headache. I know when I get it wrong, I don’t sell or we buy the wrong thing!’ Linguistic tools alongside simplification are perceived as a ‘gentler’ approach to communicating about complex products, where the communicator can assess the knowledge resource of the other individual. Consequently much focus is paid towards attempting to understand sensegiving and sensemaking by both parties. As an SME CTO (respondent number 3) states, ‘getting this right, and what we say means we both get each other’ and suggests shared meaning being helpful for buying and selling.

After the consideration of numerous aspects of sensegiving and sensemaking for purchasing decision-making, various themes have been drawn out and examined. The particular highlight is the use of simplifying linguistic tools to iteratively and reflexively lead other individuals to making preferred buying and selling decisions. These and other areas are more fully contextualised in the following

section, which aims to pull together all of the section themes in this chapter in the 'Summary'.

6.2. Summary

This chapter examines the findings and analysis for respondent constructions of sensegiving and sensemaking, where discourse is used to lead to a decision to purchase or reject nanotechnology products in a sales meeting. Major discursively presented themes are considered for sensegiving and sensemaking, and include, making and communicating sense in a sea of discourse, simplifying product reality through discourse, linguistics tools and sense and decision-making. As might perhaps be expected, these themes often overlap, but they highlight the interrelated nature of these themes. Taken together, they show how sense could be given to influence purchasing decision-making.

The processes of sensegiving and sensemaking are described by respondents as existing in all aspects of organisational life and beyond, with any 'incoming' communication (intentional or not) being able to influence sensemaking. All respondents express a belief that only spoken discourse is capable of being of practical use for selling and buying, due to the ability to use it in a fluid, rapid and reflexive fashion. This is argued as being pivotal in high technology arenas such as nanotechnology, where the complexity and opacity of products can necessitate a need for potential buyers to seek technical clarification from communicated discourse. In these situations, dyadic meetings between sellers and buyers highlight opportunities for exchanging information through discourse and where necessary, re-orientating sense between buyer and seller, to facilitate purchasing decision-making.

Even though all respondents carry out selling and buying in dyadic sales meetings, uttered discourse is carried out in a sea of wider discourses that buyers and sellers encounter from inside and beyond their organisations. While there is a propensity for respondents to claim their capabilities to reject 'unscientific' discourses, there appears to be recognition that all discourse, no matter how

perceived, can influence sensemaking. Even though this is the case, respondents frequently promote themselves as a scientist, albeit contaminated by unscientific discourse from numerous sources, which they often generate. The main focus of respondents for unscientific communication is the media, which is criticised for producing statements that challenge the notion of science as being true, which can erode their identities as bringers of truth. Respondents show a particular concern and distrust of non-scientists in their companies, and particularly managers, who they consider easily susceptible to unscientific discourses. MNE respondents discuss this more frequently as they claim that their organisations are more likely to employ managers without scientific backgrounds. However, with SME organisations only employing individuals with scientific backgrounds, these respondents do not see this as particularly problematic, although they also express concerns for MNE managers outside of the buying-selling relationship. This is due to the potential influence these non-scientist managers might exert for what products to buy or sell. Thus, all respondents argue a need to act as regulators and legitimators of discourse in their organisations, to filter out what they perceive as unscientific discourse.

Within buying and selling discourse is the continued challenge for how much technical information to utilise in sales meetings. All respondents appear to utilise a soft approach where knowledge is introduced slowly, and simplification of key ideas and terms are used, unless the respective buyer or seller indicates that they would like more detail. Importantly, alongside the use of simplification, the word ‘nano’ is used in all discourse, and particularly where sales meetings are summarised by e-mail. It suggests that this helps create a sustainable brand for these organisations as nanotechnology companies, although the respondents predominantly dislike the word nanotechnology. The dislike of the word ‘nanotechnology’ is argued as being due to the perceived incorrect use of the word by the media, which only an outsider uses in selling and buying. The choice of word can therefore be used to indicate the insider or outsider status of an individual in selling and buying.

Coupled with the strategy of simplification is the use of linguistic tools to convey sense, including analogies, comparisons, contrasts, metaphors, and narratives

amongst others. Respondents appear to favour whatever tool works for them at the time. These tools are often used with simplification and to promote a clear image of product functionality, with it being argued that functionality is often difficult to conceptualise without these tools. All respondents appear to prefer tools drawing on popular culture such as SF, to attempt to create more interest in their discourse. Linguistic tools can therefore function to aid in sensegiving and sensemaking, but also make the discourse more appealing to engage with for both seller and buyer.

Finally, the role of sensegiving and sensemaking is considered for whether to buy or reject a product. This discourse based process; utilising simplification and linguistic tools, suggests that sensegiving and sensemaking are in a continued state of flux between sellers and buyers. Respondents claim that there is a tipping point, which results in them making a yes or no decision. This is reached after both buyer and seller work to create shared meaning about a product that is often good enough to buy or reject. Creating a preferred view of a product is cited as pivotal for both buyers and sellers for producing a sale, and necessitates the seller working to understand the buyer's need and then communicating a solution. Importantly, all respondents claim their decision-making to be scientific and rational, but in many cases respondents contradict these claims by stating their use of personal preferences based on a preferred view of a product for making decisions.

The next chapter draws together all three findings and analyses chapters to give an overview of how marketing communication influences nanotechnology sensegiving and sensemaking in B2B organisations, in the discussion and conclusions.

Chapter 7. Discussion and Conclusions

7.1. Introduction

The preceding chapters have established the research framework, detailed the collection and discourse analysis of transcribed data, and presented the research findings. Drawing this study together, this chapter consolidates the main findings that address the research question, aims and objectives, and thus shows how the study has engaged with research gaps identified within the extant literature. The three pivotal research areas of the scientist role identity, nanotechnology marketing communication and nanotechnology sensemaking/sensegiving are examined. This is against a backdrop of seller-buyer tensions that appear to be discursively negotiated to reduce stigma. These areas are utilised to elucidate conclusions from this study as well as making managerial recommendations, addressing study limitations, suggesting future research and making personal reflections. As a starting point, the next section re-articulates the purpose of this study.

7.2. The Purpose of This Study

Taking a qualitative interpretivist approach has enabled an understanding of how nanotechnology sellers and buyers discursively construct and negotiate their roles as sellers and buyers, often in what appears as an anxious state brought on by changes in their liminal organisational roles. While this study did not seek to elucidate the journey undertaken by sellers and buyers from scientists to scientist-sellers and scientist-buyers, it is noteworthy that the respondents often reflected on this aspect, with aspects of their discourse considering what it is to be a scientist, scientist-seller or scientist-buyer. Unpicking these constructed and claimed identities was thus foundational to better understanding these dyadic sales relationships, creating opportunities to make theoretical contributions to the literature as detailed in this chapter.

Through interrogating respondent discourses, sense has been argued as being communicated and made through discursive co-constructions influenced by account giving and claim making. Within this approach, great attention is paid towards discursive simplification through linguistic tools (Davies, 2011) and cultural resources (Swidler, 1986) drawn on by sellers and buyers to enforce or deconstruct their positions and give and make sense of complex, ambiguous and opaque nanotechnology products. In particular, through a discourse analytic perspective, attention is paid to the language used by respondents to engage and construct their organisational experiences. An examination of the literature shows that while high technology marketing receives much attention, it is often through quantitative approaches (Londhe, 2014). In comparison, qualitative studies receive much less attention, which is unfortunate; due to qualitative studies being well suited to unpicking social structures within organisations. By using semi-structured interviews, the goal of respondents bringing their selling and buying experiences to life through talking with me has been facilitated. Drawing on my emic sensitisation and etic engagement with the extant literature, the following research question was posed, and used to drive this study:

> How do spoken marketing communications influence sense given and made between sellers and buyers, through the use of discursive co-constructions and identity claims, in B2B nanotechnology sales?

Building on the research question and extant literature, the research aim used to drive the research agenda and questions during the respondent interview stage was:

> To examine how sellers and buyers discuss their use of spoken marketing communication to give and make sense of nanotechnology products and indeed of themselves.

Within this aim were three research objectives, grounded from an initial literature search and my emic sensitisation to the sector:

1. Through a literature review and examination of current practice, to understand how sellers and buyers use marketing communications to construct their role identities in nanotechnology selling and buying;
2. Informed by a) above, and through a literature review and examination of current practice, to understand how sellers and buyers use marketing communications to give and make sense of nanotechnology products; and
3. Informed by a) and b) above, and through a literature review and examination of current practice, to draw out the linguistic tools used to give and make sense of nanotechnology.

The three research objectives are discussed throughout the following section where the discussion of key findings is carried out.

7.3. Discussion – Key Findings

Taking an extensive overview of this study, including the research findings, discussion and conclusions, the research objectives are drawn on to detail contributions to the knowledge base and scholarly implications.

7.3.1. Scientist Identity Work

This section is driven by the aim of drawing out an understanding of how and why sellers and buyers use communication related to their identities. This is predominantly associated with their nanotechnology buying and selling activities and any changes in roles; where aspects of power, othering, and gender were routinely encountered in my analysis, all discussed in the following sub-sections.

Prior to carrying out the interview stage and analysis, my initial thoughts had focussed on the extant literature including that of Ellis & Ybema (2010) where I had anticipated the respondent identities of the marketer/seller/buyer as potentially more visible and discursively prominent. As is discussed in the

following sub-sections, this is not to suggest that these identities are not important, but that the respondents predominantly chose to frame their identities and selling, buying and marketing activities through being scientists, as a means to legitimise their discourses, but also to avoid stigmatisation.

7.3.1.1. Enacting the Scientist Identity

Within any centralised role identity (Settles, Jellison & Pratt-Hyatt, 2009) is the potential for other identities to emerge and be enacted, and in this study was brought to light through the discussion of buying and selling activities, where identity work was pivotal for carrying out commercial roles. Due to the complexity of organisational roles and changes encountered in their day-to-day activities and discourses, other identities beyond the centralised scientist were also negotiated by the respondents. These identities appear to fluctuate in their salience for participants, and are linked to participants' understandings of what it means to be buyers, sellers, and, above all, scientists. While multiple identities can be claimed (to greater or lesser extents), it is well recognised that the construction and claiming of these identities can be pivotal for creating organisational acceptance and legitimacy through discourses used (Settles, Jellison & Pratt-Hyatt, 2009). There are however certain organisational situations that can create anxiety and pressures for organisational actors to enact/claim/adjust their identities to mitigate anxiety or stigma. This was shown by the SME CTO (respondent number 6) who said 'Look, I'm a scientist who sells and buys, and I shift between these identities as needed! If I need to be a buyer I'll be one, shrink the seller, or vice versa and I'm in charge of this. It helps me live my day-to-day with limited stress'. For individuals engaged in multiple organisational role-based activities, identities appear to be drawn on as required, legitimising 'whom' the respondents 'need to be' to achieve multiple identity-based goals set by themselves or the organisation. While this suggests an identity 'toolkit' where identities can be drawn on at will, caution must be taken with reaching such a conclusion, as there may still be much to unpick in this area.

7.3.1.2. Identity Tensions

While multiple identities seem to be negotiated, the simplicity of 'picking' identities potentially underplays the complexity of this process, often reflected on through described dyadic discourses, where anxiety, tension and discursive contradictions exist for what identities and identity aspects to enact. This is shown in the internal contradictions prevalent in so many of the interviews, where a statement is made and subsequently contradicted, often immediately and with the contradiction being acknowledged by the speaker. An example of this is given by a buyer-seller manager (respondent number 2) saying, 'In fairness I do contradict myself, but what is important is that only I see this, as nobody can hold me to account. This is not to say that I don't feel anxious as I can get caught and don't always believe what I say'. This suggests an element of acceptability providing the respondents are not overtly observed as engaging in this tactic.

Throughout this study, respondents frequently discussed what could be considered their centralised role identities built on constructions of their perceptions of what it means to them to be a scientist and positioned against other organisational actors (Cash et al, 2003) such as those involved in marketing exchanges. This enabled these individuals to claim a similarity to other scientists, while at the same time making them different from others (Pullen, Beech & Sims, 2007) due to othered selling and buying activities. Discussing this, the SME MD (respondent number 4) stated 'I still get to claim to be a scientist of sorts, distinguishing me from the hoi polloi. It's like being part of a select club [laughs]'. While the respondents keenly argued the importance of being scientists, it was clear that they experienced anxiety from potentially being othered by scientists they considered as more legitimate i.e. scientists working in laboratories or academia.

Re-examining the work of Jain, George and Maltarich (2009), the scientist identity can create challenges for individuals who use this identify for how they enact and engage with their identities in different organisations, which in this study was often revealed through discursive contradictions from the respondents. This aspect can be particularly problematic where individuals experience

organisational tensions (Townley, Beech & McKinlay, 2009) and where acting as the scientist may require different discursive legitimisation tactics, to get others to accept their identities (Beech, 2008) and to avoid being othered. For example, all respondents claimed to have worked as 'actual' scientists before becoming scientist-sellers and scientist-buyers, necessitating their negotiation of these organisational roles. As the SME MD (respondent number 4) stated 'when I worked as a scientist, I simply spoke as one. But now in this role, I have a new way of mixing the science and business, but all through me as the scientist'. This study therefore supports the work of Jain, George and Maltarich (2009), where organisational changes in identity are perceived as occurring through an identity building activity, of one identity on top of another, rather than simple switching from one identity to another (Ebaugh, 1988; Hoang & Gimeno, 2005), although minor elements of switching were also noted. More simply, for the respondents in this study, their identities as scientists appear discursively centralised, and used in conjunction with other identities, often at the same time, instead of switching from one identity to another. While this appeared the case, internal contradictions were noted by the respondents due to their unease of how to regard themselves as scientists when they openly admitted they functioned as marketers, sellers, and/or buyers. Thus, it seemed that being 'the scientist' was always something to be negotiated, and an identity that could be challenged by others or themselves.

Positioning themselves as scientists appears an important way to avoid stigmatisation (Goffman, 1963), particularly from being othered, where the centralised scientist identity can be used to protect these individuals against discourses and identity aspects overtly constructed from within marketing or as belonging to the marketer. An SME buyer (respondent 13) commented on this saying 'I'm a scientist buyer, not just a buyer, and being a scientist prevents people from looking down on me'. Thus, the scientist is an identity-based vehicle to empower an individual in an organisational role as a seller or buyer, while creating a new way of viewing selling and buying as a collection of predominantly scientific activities. In this way, selling and buying is brought within the remit of what the respondents consider science, creating what they promote as empowered hybrid identities of scientist sellers and buyers, drawing

on the positive aspects and rejecting stigmatised aspects. This study is the first to consider these aspects for scientists found outside of academia, where discursive tensions are commonly found as individuals in these organisational roles attempt to negotiate the complexity of their constructed identities.

7.3.1.3. Power and Gender

Within the commonly encountered discourses used by the respondents were tactics to consolidate their positions as truthful, and a means to exert power and persuade others, capable of being adjusted when necessary, to position a new identity or stance. Examples of these discourses are given by the SME CFO (respondent number 5) who states 'being a scientist gives me power over non-scientists, over managers, lets me convince 'em that I'm right and to be trusted and speak the truth'. Expanding on this the same respondent comments 'I just say "remember, I'm a scientist" and this is important as it reminds them that they are not a scientist'. This enforces the notion that identity is constructed by not only who we consider ourselves to be, but how we perceive others perceive us (Lawler, 2013).

The scientist identity appears to have much to offer respondents in this study who claim a priest-like position and status enacted through discourse within their organisations and in sales relationships. In this context, the 'priest' is a discursive vehicle to legitimise the 'rightness' of what is said as 'factually' correct. An example of this is shown by an MNE seller (respondent number 10), stating 'Hey, I have a right to speak as I know the world as it is, well maybe not exactly, but the guys I work with think I do, and I use this'. The shifting construction of 'right-to-speak' through being priest-like is nothing new but has been receiving growing attention particularly through popular media channels (Forshaw, 2012). This study expands on what might be considered an over-generalisation from the media, about the status of such roles, to unpick how scientists discursively construct themselves as priest-like, albeit often with a degree of contradiction. In the case of these respondents, where they promote a priest-like status, this appears as a deliberate tactic to legitimise their utterances and identities.

Within this study, as participants strove to exert their own power and position themselves as powerful, all non-scientists were criticised, with the scientist identity being argued as most desirable, and with the respondents showing tension over not always being considered legitimate scientists. Discussing this, the SME CEO (respondent number 1) stated 'Being a scientist is what matters. Everyone else is criticised and targeted to destroy their legitimacy. Hmmm, it is simply a means to an end. An ability to speak and be accepted, but we are not always accepted as scientists'. Expanding on this, and showing a high degree of reflexivity, the same respondent acknowledged, 'We use science to delegitimise, yeah! But if it wasn't science, it would be something else. Science just works best and fits cultural perceptions of us being God-like'. This also suggests the desire for these respondents to utilise power based on their self-constructed status, and that in this context having a scientist identity legitimises this power.

Importantly, reflecting the comments of Kemelogor and Etzkowitz (2001), all respondents expressed discursive power through what might be considered masculine discourses, rejecting what they considered feminine discourses. While this was a predominant theme throughout this study, the prior comment by the SME CEO (respondent number 1) can again be considered, where gender can potentially be regarded as a discursive vehicle to legitimise identity and discourses via perceptions of similarity of speakers. An example of what is constructed as a feminine discourse is given by the SME MD (respondent number 4) who says, 'I'm a scientist [pause], he's a scientist [pause], we're, we're sci, scientists [pause], we don't want to talk about My Little Pony! Sci-fi is the closest thing to what we do, and we love it, so yeah we use it for sales'. In this example, a child's toy (My Little Pony), which can be regarded as an overtly feminine toy, is contrasted against the scientific work that the men do in selling and buying. Such a comment potentially delegitimises what may be constructed as feminine interests or behaviours.

It is noteworthy that most respondent discourses avoided anything that might be linked to femininity, revealing an absence of discourse in this area, and instead focussing on what Keller (1985: 7) calls 'virile power'. Expanding on this aspect, analysis suggests that through cultural references from militaristic themes, that

there may be shadows of virility, as shown in the following example by an MNE seller (respondent number 8), who said ‘At some level it is about winning, scoring, fucking your way in to the future! I want to spread my selling genes, and I do this by selling. You don’t do this; you are genetically dead’. Such masculine themes portray the extension of life, through a particularly aggressive notion of being male, where selling is done to someone else, and in a way perhaps that is detrimental to another. While most comments were not as overt as this example, again it is the lack of acknowledgement of anything that might be construed as feminine that is striking. This suggests a lack of willingness to voice anything that might be considered as weak, such that concessions to feminity are effectively stigmatised as much as the as the practice of selling.

7.3.1.4. Discursively Negotiating Identity

To achieve their goals related to identity, the thoughts of Harris (1997) can be drawn on where ‘suasion’, particularly dis- and per- can be used to position and discursively negotiate identity aspects. While the scientist identity appears highly valued for suasion, other role identities such as the manager or the manager scientist utilised by respondents with MBAs, are also described as a route to organisational legitimacy, albeit with negotiation depending on the organisational situation encountered. Discussing this, the SME CEO (respondent number 1) said ‘Having multiple identities, like hats is important. I can manoeuvre as need be, shifting back and forth between scientist and manager, while always being both’. This suggests an element of switching identities, mixed with building on some sort of foundational identities as shifts occur.

Respondents frequently claimed to construct their identities as perceived necessary, with what appeared as an understanding on their part of the benefits of doing so. An SME seller (respondent number 8) claimed ‘Look, I know what I’m doing. It’s playing a game really, playing with who I am to fit the situation. Round and round we go, always to benefit me’. Digging deeper into this aspect, even more role identities were described by the respondents showing, for example, nuances of what it means to be a scientist. This included being not only

a scientist, but perhaps a chemist or biologist, within the centralised scientist identity, and this is thus another route to legitimising organisational positions through discourse (Amiot, Terry & Callan, 2007). By being able to enact a particular type of scientist identity, discursive shifts could be operationalised to highlight extant knowledge, and to support or reject aspects being discussed within sales meetings, based on 'superior' specific knowledge. This suggests an adaptive and reflexive approach, where discourse can be used to construct and position respondent identities in selling and buying, as required. Importantly however, discursively presented 'knowledge' does not have to be correct, only 'good enough' to convince another seller or buyer who may not have the prerequisite knowledge to unpick a claim being made. An MNE buyer (respondent number 11) stated 'This is a dangerous game, but I know I can secure my point by using very clever tech rhetoric that might not be technically true'.

Notably, studies such as Zabusky and Barley (1997) have shown that scientists are continually exposed to different actors, necessitating different discourses, ranging in heterophily and homophily, and in this study, men interacting predominantly with men. While gender has been more explicitly addressed previously in the prior sub-section, it is worth noting here that respondents claimed to engage with a low number of male actors who were all 'similar', such that they often described their typical organisational discourses as masculine and relatively homophilous. There is however the potential for heterophily to arise from poor sensemaking in sales meetings, particularly from high technology products. Where heterophilous communication occurs, both sellers and buyers must co-author discourses to aid in sensegiving and sensemaking. An SME CTO said 'I know we are all scientists, but sales meetings are hard work. Much confusion at times especially where there are new products not seen before. We must work together to understand each other'.

7.3.2. Nanotechnology Marketing Communication

This section is driven by the aim of understanding how marketing communication is used to give and make sense of high technology, and in particular nanotechnology products, where there is much for speakers to negotiate. However, before marketing communications are explicitly addressed, some groundwork is put in to explain spoken communications.

The value and use of personal spoken marketing communication between sellers and buyers is acutely acknowledged in B2B literature (Kotler & Pfoertsch, 2006; Slater, 2014). My emic sensitisation from having worked in this sector, and etic examination of the extant literature (e.g. Rogers & Kincaid, 1981; Rogers, 2003) led me to take a stance that B2B marketing communications between sellers and buyers within nanotechnology is most likely to be carried out through interpersonal face-to-face spoken discourse. Although this supposition was made before the interviews took place, a partial-bracketing on my part (Hycner, 1999) meant I undertook a reflexive examination of respondent preferences for which communication type was used, which if not in support of spoken discourse would have changed the nature of this study. Upon entering the interview stage, I noted that respondent discourses do confirm the initial selection for the importance and use of spoken discourse, and as such, while other marketing communications are not actively pursued in this study, I remained mindful of any discourses referring to them. Discussing this, an SME CTO stated ‘Of course we can communicate in any way we want, there are no physical laws prohibiting this, but we need stuff that works, and talking is the best way to do this’. All respondents mirrored similar sentiments throughout the interviews for the importance of talk-based marketing communication, and as such a much deeper examination of this aspect of sensemaking was undertaken.

Throughout the discussions with the respondents, common and important themes emerged, focussing on science having a language distinct and separate to other discourses, where science discourses could be viewed as fit-for-purpose and beyond deceit, although the respondents often contested their own belief in these aspects as respondent number 2 identifies below. Examining what it meant for

science be discussed, and constructed through a separate language brought the conversations back again to the priest-like status of the respondents (Forshaw, 2012). A buyer/seller manager (respondent number 2) commented on this saying, 'being a scientist is practically like a priest, and we have our own way of saying things'. Expanding on this, and showing a degree of internal contradiction, the same respondent said 'We say it in a different language, well it is and isn't, it is as we are special and need a special way of saying things, to keep anyone without knowledge out. It isn't as it is still English'. This 'language' uttered through spoken discourses is still in English, and is 'given' power by these respondents and constructed as a separate language to legitimise their discourses, identities and organisational activities. This was predominantly claimed through short impactful statements (almost as a form of 'sound bite' made by respondents) drawing on linguistic tools and cultural references, which can be considered an act of sensegiving, to position respondent discourses as 'real' and beyond doubt. Although again it is worth reiterating that the respondents often appeared to realise that this was a discursive game played to legitimise their views, and one that they did not always support. As mentioned previously, discursive negotiation can be considered a game, but one with consequences relating to identity being legitimised/delegitimised through discourse, and with product understanding also being facilitated through this tactic.

Giving an example of a 'legitimising' comment, an MNE seller (respondent number 10) stated 'Water becomes H_2O, oil becomes hydrocarbon! Coded for those in the know'. Thus, technical terms are a means to demarcate an insider/outsider status, where the ability to use technical terms legitimises/delegitimises the speaker. By itself, language has been widely discussed for the potential of constructing individuals as insiders or outsiders (Nero, 2015). Limited attention in the extant literature has been paid to how this is carried out by scientists and other nuanced individuals enacting hybrid identities, with this study indicating the value of technical terminology to fluidly co-author the group status of a seller or buyer by the terms they use. Thus my analysis of the nature of the language employed in buyer-seller communication should ideally be read alongside the preceding section's discussion of identities. I believe that the extant literature has been expanded by this study to show the

complexity of negotiation required to author technical discourses and how this interacts with identity.

Unpicking respondent discourses highlights what appears to be a belief that only interpersonal spoken discourse is capable of producing enough sense to sell and buy products, and supports the work of Mohr et al (2001). These conversations had to be articulated in a way that was relevant and compelling to individuals receiving them, where they could see themselves as part of the story being told (Simakova & Neyland, 2008). Within spoken communication based discourse is the use of respondent positioning for their role identities as scientist sellers and buyers, which supports discursive claims made about organisational needs and product functionalities. While role identity positioning has been explored in the extant literature (Settles, Jellison & Pratt-Hyatt, 2009), this study has demonstrated the value of role identity positioning and hybridity for marketing communication, particularly where seller and buyer knowledge is vital to understanding how a high technology product might work. In such cases, identity is not flipped like a switch, but appears instead to be built on where the scientist identity is maintained, with nuanced discourses being used to demonstrate the seller or buyer identities (Jain, George & Maltarich, 2009). Discussing this, the SME CEO (respondent number 1) stated 'I'm a scientist and speak as one, especially when selling and buying. But like building a house, the scientist is a foundation, and I can add other levels on like a marketer first floor'. Expanding further on this metaphor, the internal contradictions uttered by the respondents suggest an identity-based foundation that is often shaky, with much anxiety for how to persuasively enact the scientist identity. Problematically for the respondents, not only do they view, 'live' in and co-design this house but also invite other 'expert' organisational actors, or those who are othered, to view their construction, leading to potential judgements of legitimacy and stigmatisation.

In discursively constructing this 'house', respondents frequently discussed homophilous communication and cultural closeness as a vehicle to facilitating sensegiving and sensemaking, and ultimately to aid in purchasing decision-making (Song & Parry, 1997). With all sellers and buyers being scientists and using what appear to be similar role identities and preferences for ways to speak

about products, sales discourses are constructed as predominantly homophilous and male orientated. However, and while predominantly homophilous, respondent discourses indicate the fluid nature of homophily/heterophily, where simple intonational changes, single words, and technical terms can move discourse towards or away from cultural closeness. These shifts were often aided via the use of specific utterances to legitimise the speaker, through persuasive technical terms, which do not have to necessarily be correct, but sound right enough to be accepted. This was shown by the SME MD (respondent number 4) who said 'You don't have to be right, only right enough. No scientist really understands another scientist absolutely. It is about sounding right, and not being completely wrong'. This suggests a high level of reflexive negotiation for what is accepted or rejected between sellers and buyers. However, as we have seen, no comments are made about the use of what might be considered highly gendered discourses. I speculate that there is little need for the respondents to consider what might be regarded as overly-sensitive, feminine reflexivity due to selling relationships being male-dominated.

In another frequent theme, it appears that the word 'nano' is often added to discourses to enhance cultural closeness by asserting that 'it is' nanotechnology being bought, sold and discussed, not only within the sales meeting, but also throughout wider organisational discourses. Importantly, the use of the word nano not only potentially shows an insider status, but also reinforces an elite nature of the communications being used, where a failure to use this term can erode identity and power. The SME CFO (respondent number 5) claimed 'You have to use the right words, play the game, show that you are legit and not a faker, and saying nano does this'. The respondents demonstrated many other examples of this approach for drawing close to another seller or buyer, and it can thus be argued that the discourse analytic method brings a much subtler understanding of just how to play this 'game' in this high technology arena, which is facilitated by my perceived embeddedness within the sector. Talking about the interview process, an MNE seller (respondent number 10) stated 'before doing this I thought it would be some stupid tick-box exercise but talking. Being able to speak more widely and as a human has given me a chance to yap about the world as I see it and as it perhaps is'.

Of pivotal importance to claimed marketing communication strategies is the ability to give and make sense about products, through discursive tactics including product simplification and linguistic tools. These aspects are more fully considered in the following section.

7.3.3. Nanotechnology Sensemaking

This section is driven by the aim of understanding which linguistic tools; cultural resources and other discursive practices are used in sensemaking within nanotechnology seller-buyer relationships. Like the previous two sections, this area is also full of discursive contradictions, where respondents attempt to legitimise themselves, in this case through sensegiving and sensemaking.

It is well recognised that sensegiving and sensemaking are important parts of organisational life (Daft & Weick, 1984; Krush et al, 2013), something echoed by respondents in this study. Speaking about this, an MNE buyer (respondent number 11) said ‘At the heart of it we have to be understood and understand, otherwise the sales meeting fails, especially for high tech and nano’. Set against a backdrop of complex, opaque and ambiguous high technology products, and coupled with identity based discursive power structures, respondents described sensemaking as an inherently challenging but necessary part of their daily activities as sellers and buyers. An SME CTO (respondent number 6) expanded on this, saying ‘Tech products are a nightmare, always new, always coming out of R&D, and we literally have to invent what to say about them’. Extending this analysis further, it can be argued that not only do the respondents have to ‘invent’ discourses for products but also for themselves as sellers and buyers by claiming a quasi-scientist status, where there is much to be legitimised in the sales event. This can be seen as a potential means to legitimise both products and themselves as credible boundary spanners.

Undertaking what appears as a co-authored reflexive stance towards product understanding, and discursive sensegiving and sensemaking both sellers and

buyers describe being in a fluid relationship where discourse is the currency to enact their sensemaking and to facilitate selling and buying outcomes. The two preferred discursive tactics for sensemaking are simplification and the use of linguistic tools often through cultural resources. The SME MD (respondent number 1) stated 'Sometimes we just need to simplify what we say, no point beating around the bush. And push comes to shove, talk about sci-fi or what was on the TV last night so people understand quickly'. The exploration of fictional discourses by managers has been relatively limited within the extant literature (Hansen et al, 2006; Jermier, 1985; Taylor, 2000), but this study has examined how this discursive tool can be used within the seven properties of sensemaking (Helms Mills et al, 2006; Mikkelsen, 2013), particularly through identity. In line with a sensemaking perspective, the aim of sellers and buyers is constructed as being towards creating a preferred product view, one that may not be technically correct, but which is good enough to create understanding and shared sense. Thus, elements of 'fact' and 'fiction' are discursively brought to life in sales relationships drawing on lived and imagined experiences. Discussing this, an SME buyer/seller manager commented 'It is a funny old mix really, I fuse science fact with science fiction, unofficially of course, as science is fact, and so is all of our communication'. The challenges for this discursive activity appear to be able to use linguistic tools and cultural references that are accepted by other sellers and buyers, to communicate sense while mitigating delegitimisation, and thus maintaining some power within the relationship.

The seven sensemaking properties and example respondent discourses shown previously in Table 6.2, demonstrate a propensity for the respondents to create preferred selling and buying product views linked to their identities, jointly co-authored to make sense. While the orientation of discourses within these sales relationships is towards homophily, the necessity for respondents to engage with highly complex technological aspects means that sensemaking is still required (Weick & Sutcliffe, 2007). Commenting on this, the SME CEO (respondent number 1) said 'I know we are all scientists, speak pretty much the same language, but there is still confusion based on these damned products! This has to be talked out!' While the respondents were keen to discuss the confusion regarding the products with each other and indeed myself, it must be noted that

they are predominantly more interested in how this confusion impacts on their identities and their ability to discursively negotiate their way through sales meetings.

Examining simplification first as a vehicle for sensemaking, this often involves removing technical terms that might cause confusion, until a platform of understanding between the seller and buyer can be established, where a co-authoring stance can be utilised. Technical terminology can often act as a sensemaking cue, requiring a reduction in further technical terminology, or more understandable terminology, or alternatively the use of linguistic tools. An MNE buyer (respondent number 10) stated 'We both try to get rid of the techno jargon, at least while we are assessing what each other knows. Otherwise we get engulfed in confusion, he doesn't sell and I don't buy. No good to anyone!' Reflexively engaging in this discursive practice can also safeguard both seller and buyer identities from having to admit a lack of knowledge, where like a game, rules can be set to allow both individuals to 'play'. This game is no small undertaking, however, as success can be regarded not only in terms of whether sense is given and made, but in the legitimacy of discourses used.

This study adds to the work of Kennedy (2008) and Krush et al (2013) and builds on the argument from Bordas (2015) that a greater focus should be paid towards the use of technical terminology in sales environments, specifically towards discursive tools to aid sensegiving/sensemaking, but also suggests the internal contradictions in achieving this goal. The use of technical terminology is shown to be able to aid in sensemaking, where it is in line with homophily, but can also create confusion and poor sensemaking where it is heterophilous. Thus sellers and buyers must remain reflexively vigilant to engage with a sensemaking process, where any individual must try to make sense of their sense given, and act accordingly, while the recipient of sense must also engage in sensemaking, and subsequent sensegiving based on sense made. Importantly, the respondents seemed acutely aware of these issues, with the SME MD (respondent number 1) saying 'We are both responsible for us both understanding, and if not us, who else? We must both work on being clear and understood'.

Prior to this study, linguistic tools have been argued as being able to aid in sensemaking for high technology products (Sardar, 2010; Davies, 2010). Expanding on these studies, this study highlights the value of these discursive devices, which can simplify what is said and the sense made, through the use of wider popular cultural constructions of products. While dystopian constructions have been indicated as problematic in heterophilous studies, for potentially causing confusion (Coleman & Ritchie, 2011; Dragojlovic & Einsiedel, 2013), I demonstrate that homophily allows a wider use of 'negative' product constructions, without necessarily leading the sensemaker to regard a product negatively. In other words, and for example, science fiction machines (Terminators) are orientated towards genocide but can be used to showcase product robustness, as scientist sellers and buyers can differentiate between beneficial discourse as a marketing device and how a product 'really' works. An MNE buyer (respondent number 12) said 'Just because a negative example is used, doesn't make a product bad. As long as you get enough of the science, you can understand it well enough, and in fairness all products have negative aspects'. These discursive practices are built on the notion of cultural anchors (Marcu et al, 2014) where sense can rapidly be made as a consequence of 'enough' understanding of a cultural reference, limiting the amount of scrutiny being made of a statement (Coleman & Ritchie, 2011). Short statements appear useful in this arena for producing linguistic shortcuts to give and make sense, where clusters of terms, often already associated with well-known social and cultural phenomena can be drawn on and sense made. The SME CFO (respondent number 5) commented 'It is important not to get drawn into endless chatter, but get the point across simply and shortly, trying to assess whether what has been said makes sense to the other dude'.

After drawing together and discussing the key findings in this section, the following section highlights the conclusions from this study.

7.4. Conclusions

This study was carried out to better understand how spoken marketing communication influences sense given and made between sellers and buyers in B2B nanotechnology sales through co-authored discourses. Before going on to draw the three main conclusions linked to the three objectives linked to the reseach aim underpinning this study, a summary statement of contribution is given:

In this study, a critical examination has been given of the language that scientist sellers and buyers employ to facilitate sensemaking in B2B nanotechnology marketing communications. These boundary spanners, being aware of the discursive difficulties in constructing high technology products and their identities, use a variety of linguistic tools, co-authoring selling-buying discourses to foster cultural closeness, which appears to be 'good enough' to give and make sense.

1. How sellers/buyers use marketing communications to construct their role identities in nanotechnology selling and buying.

I have shown that respondents' constructions of their role identities are argued by them to be critical for undertaking selling and buying related activities, in high technology markets, particularly for positioning their identities as scientist sellers/buyers through talking. It is well recognised that organisational actors may utilise different role identities as a means to facilitate their position and levels of acceptance within their organisations. The two respondents with MBA degrees highlight this point by further utilising role identities as scientist-seller/buyer-managers, with an ability to choose which identity to highlight as a means to legitimise their stance and discourse, as well as increasing their power. The social status of the scientist identity in organisational environments must not be underestimated, and to paraphrase Harris (1997), the scientist is now the priest (Forshaw, 2012), and the one with knowledge. Engaging with the respondents suggests that they construct and discursively position their role identities as individuals in the 'know' with a priest-like knowledge to be revered and

respected, and discursively positioned. The centralised identity of the scientist is thus a means of attaining organisational legitimacy whilst reducing the effect and stigma associated with business activities. While claiming a scientist identity, it appears that the respondents experience high levels of anxiety from the internal contradictions of no longer functioning as scientists in laboratory environments, yet while trying to claim identity aspects of this organisational role. Thus much of their discourse tries to offset this anxiety and to empower their identities as legitimate scientists engaged in 'new' scientifically-related activities of selling and buying, using numerous discursive tactics to achieve this.

This study suggests that the predominant vehicle for shifting between role-identities is through a 'building' process (Jain, George & Maltarich, 2009), rather more than just 'flicking a switch'. The respondents appear to feel that their scientist identities are inherent; existing no matter what other identity may be enacted. However, while this claim is frequently made, it is often routinely contradicted through the fear of losing the scientist identity or being able to erode another individual's similar identity. Reexamining the issue of respondent anxiety related to the scientist identity, if the metaphor of a scientist identity foundation is used for a house, it is a 'shaky' foundation at best, discursively presented through internal contradictions, with much discursive effort being used to mitigate this aspect.

With much spoken discourse in sales meetings focussing on product functionality, the value of being perceived as understanding scientific aspects of these products is easy to appreciate, yet filled with many challenges for sellers and buyers. Thus respondents claim that constructing centralised role identities as scientists carrying out selling and/or buying can meet the goal of legitimising scientific understanding. Where further legitimisation is required, hybrid role identities can be utilised to simultaneously draw on role identities as sellers, buyers or managers (Jain, George & Maltarich, 2009). While the work of these authors demonstrated hybridity for scientists employed as 'scientists' engaged in commercial activities this study has expanded this to show how the scientist identity in a hybrid form is still critical for individuals functioning in businesses as nominally sellers or buyers, carrying out commercial and non-traditional

scientist activities. Identity as a singular or hybrid construct is defined through respondent spoken interpersonal face-to-face discourses, enabling rapid shifts and new enactments, as seen fit for whatever the sales relationship requires.

2. How is marketing communication used to give and make sense of nanotechnology products?

Spoken discourse is highlighted as being a practical and widely used way to give and make sense of high technology products in high technology B2B sales relationships. (Rogers, 2003; Slater, 2014) The main two reasons are thus, (1) the rapidly reflexive capability of using spoken discourse to create homophily; and (2) that other types of communication, such as advertising, conflict with constructed role identities as 'scientist' sellers or 'scientist' buyers, i.e. where the use of 'traditional marketing' is deemed contrary to scientist identities and is potentially stigmatising to the respondents (Goffman, 1963). In other words, scientists appear to construct their communication via spoken discourse to facilitate selling and buying, and to reinforce their identities as scientist sellers and buyers while minimising the perceived negative impact on their identities of having to undertake marketing based activities. Selling and buying is thus about both the products being bought and sold, and about the people buying and selling them. Communication is a vehicle to empower the respondents, while enabling them to negotiate stigmatisation by who they say they are, and what products they buy and sell. Marketing communication can therefore be considered a discursive currency to not only facilitate selling and buying, but also to construct and legitimise identities, the power that is wielded, the anxiety experienced, as well as facilitating sensemaking.

The choice of marketing communication (spoken interpersonal) is not the only consideration for giving and making sense of ambiguous products, as the content of the communication, i.e. what is said, and how it is said, is also of interest. This broadly fell into the framework of homophily/heterophily (Rogers, 2003), where reflexive co-authorship of discourse between buyer and seller is constructed as being capable of orientating discourse into homophily as well as the acts of

selling and buying. At the other 'end' of the spectrum, a lack of co-authorship can lead to heterophily as well as anxiety, and a perception that selling and buying may be hindered. With all respondents having backgrounds in science and similar organisational roles, the described discourse appears to be predominantly homophilous, and as such aiding in relationship closeness and sensemaking, reducing anxiety. Due to the nature of discourse being predominantly homophilous, short 'scientific' statements appear as a powerful yet simple means to subtly orientate selling and buying outcomes as required. Caution was noted however for the use of dissimilar discourses linked to different types of scientist, such as from a chemist with a biologist, where technical terminology might result in heterophily and poor sensemaking. While both buyer and seller having a similar scientific background can result in what appears as high levels of homophily, if in doubt, care was taken to enact a generic identity of the scientist using reduced technical terminology. These aspects and decisions for what identity to enact appeared in a continuous state of negotiation, whereby the products being discussed were critical for what identity to enact, and what to say to make sense of nanotechnology products.

3. Which linguistic tools, and other discursive practices are used in sensemaking?

With product discourse often focussing on scientific and technological aspects (Bordas, 2015), respondents described a continued need to discursively construct these products as well as themselves to give and make sense (Weick, 1995). Respondents emphasise two discursive strategies, including (1) simplification of discursive technical discourse, and (2) the use of linguistic tools, often in combination. Examining simplification first, respondents discuss their choice of reducing technical terminology to increase sensemaking, or increasing it, as a way of obfuscation and selling. While obfuscation is a relatively rarely described process, as most discourse is homophilous, it shows that clarity in selling and buying is not always preferable. Looking at reducing technical terminology to make sense, the notion of co-authoring selling-buying discourse becomes prevalent (Shotter & Cunliffe, 2003), where an iterative stance is taken towards both parties working to use terminology perceived as suitable. Although co-

authorship is a prevalent theme, simple discourses can often be effectively 'traded' between sellers and buyers that sound right enough to work, and are grounded within an easy to understand cultural reference.

Beyond direct simplification, is the use of linguistic tools (Davies, 2011), which itself may be considered a means to simplify discourse. These discursive devices, including for example metaphor, and analogy etc. are argued as being capable of producing culturally contextualised discourse that is often widely understood to emphasise desired product characteristics. This strategy is again through interpersonal discourse between sellers and buyers, and is claimed to be able to rapidly highlight technical concepts that may be difficult to give and make sense about. In this way, a good enough approach is sought, that often links linguistic tools to preferable themes for sellers and buyers through spoken discourses. Such tactics are not however used with individuals without a science background, as this is believed to cause difficulties in sensemaking where conflicting messages may occur. This suggests the importance for not only role identity, but also the value of spoken interpersonal discourse for marketing communications based on high technology and ambiguous products.
After drawing conclusions to the three objectives in this section, this information is drawn on to produce managerial recommendations in the following section.

7.5. Managerial Recommendations

Drawing on the findings, discussion and conclusions from this study, the importance of seller and buyer discourses has continually been highlighted for the three research objectives, which is where the managerial recommendations will be focussed towards in this section. As a preamble to the suggestions made in this section, I re-emphasise that there are only a low number of buying and selling companies in this sector, with limited selling and buying opportunities, and where obtaining the 'right' product is not always a simple task. Pivotally, there is a need for managers to engage with the discursive aspects of sales relationships, as opposed to viewing only what sellers and buyers are 'doing'.

As highlighted by Ellis and Hopkinson (2010), and stated by Michel et al (2003: 268) 'training of many managers is not always adequate when trying to understand the phenomenon of communication'. This necessitates a nuanced view of the 'education' of managers for increasing their knowledge of discursive practices, as it is not simply an issue of them learning what to say or do to improve sales relationships, but more how to engage with discursive sales practices. Ellis and Hopkinson (2010) discussed this challenge, drawing attention to the difficulties for marketing managers in using 'off-the-shelf' strategies that seek to 'teach' managers how to manage these complex and often paradoxical discourses (Wilkinson & Young, 2002). While there can be benefits to producing simple strategies, they can miss much of the nuanced complexity present and discursively brought to life in sales relationships. Instead, and in line with the thoughts of Håkansson and Snehota (1995) it is suggested that managers work towards coping with the challenges of sales relationships, as opposed to more traditional approaches of managing them. As Ellis and Hopkinson (2010) argue, this has the potential to facilitate managers constructing reflexive identities better suited to working with sellers and buyers, themselves enacting nuanced and often hybrid identities, enacted through discourses. The following paragraphs explore how this might be carried out for managers in the respondent companies, as well as in similar companies, facing comparable challenges.

All respondents identified challenges to selling and buying, predominantly related to new relationships, but also in existing relationships, where cultural closeness was either to be negotiated, or in a continuous state of negotiation. Clearly, increasing homophily can facilitate shared meaning and understanding between sellers and buyers, with the question being how to do this. Identity and identity-based discourses can be critical for cultural closeness, where reducing how others are othered, and overtly constructed as culturally different should be avoided if closeness is desired (Fischer & Hout, 2006). According to Smith, McPherson and Smith-Lovin (2014) this is likely to require individuals constructing each other as heterophilous to meet and speak working on areas that can draw them close to each other. This is not about producing a 'how to' guide for managers (Faria & Wensley, 2002) but more about managers becoming

reflexively open to engage in their own sensegiving and sensemaking to better understand what is being said, and working with buyers and sellers to do this.

Thus, managers must bridge any gap between themselves and those designated as buyers and sellers with an organisation to understand cultural distance between buyers and sellers. While this is no small undertaking, the practicality appears that the sellers and buyers in this study already feel capable of carrying this out with other sellers and buyers, as an iterative and reflexive learning process. Following on from the findings from this study, it is suggested that talking appears to be the most appropriate vehicle to achieve this, where sellers or buyers reduce technical terminology, and increase the use of simplified culturally well-known linguistic tools to aid in sensegiving and sensemaking to better explain their sales relationship. Not wanting to push this into what might be considered a singular rigid approach, and as is detailed in section '7.7 Future Work', the construction of a simple model based on this study's findings might be of benefit for how to approach this aspect of marketing communication. This approach would likely use linguistic tools and cultural resources, to aid in sensegiving and sensemaking.

7.6. Limitations

Although there have been contributions made to the extant literature, and management/seller/buyer practices as a result of this research, there are also limitations. The point of this section is not to unpick minutiae, which are well addressed earlier in this study, but more to undertake a meaningful engagement with this study as a whole, and draw out the most critical limitations.

As a starting point, respondent preconceptions about working with me as a university researcher prohibited the collection of naturally occurring discourse from sales environments. This meant that a semi-structured interview method was instead used with discourse analysis where I posed questions and orientated respondent discourse within relevant research themes. I was thus an active participant in the co-authoring and construction of discourse, whilst trying to

bracket my preconceptions (from my prior sensitisation to the sector), and giving the respondents a legitimate voice. I feel it would be wrong not to acknowledge the influence of my role in constructed discourse, albeit the impact is somewhat unknowable. As this study highlights, respondents claim to vary their discourse and role identity by the person they are speaking to, and if taken to a logical conclusion means that they potentially carry this out with me as well. Importantly however, prior to the interviews, all respondents knew that I have practically worked as a scientist and scientist seller and buyer as well as in marketing high technology products, including nanotechnology. From much of the interview discourse, I conclude that my treatment and access to 'privileged' insights is due to respondents constructing me as an insider, and as such is a benefit to this study.

Throughout the interview stage, the question of how and why respondents construct their discourse, with me as a participant audience, is always present. Taking a blunt stance, constructions may be a fair reflection of how they perceive and construct their organisational roles, or alternatively, they may be 'just saying' what they think I want to hear. Using the discourse analytic perspective is insightful in this aspect as it enables discourses to be worked against each other, and themes as a whole, where I can form a re-workable opinion on discourses given. Using a warranting process (Wood & Kroger, 2000) for all worked data means that it is possible to unpick numerous nuanced aspects of used discourse, whereby the reasons for certain discursive practices often became clear.

Finally, while all respondents repeatedly claim they experience high levels of autonomy for their organisational roles as buyers and sellers, respondents still claim to receive instructions from their organisations (implicit and explicit) for what to buy and sell. Wider access to this information, apart from minor discussions from respondents was blocked by the respondent organisations throughout this study. This is due to respondent organisations claiming a need to limit my access as a researcher as pivotal to 'testing' my and Durham University's ability to 'behave' and treat information as confidential. At the end

of this study, and as is detailed in the following section, this aspect is forming an on-going negotiation to enable further information to be made available.

7.7. Future Research

As might be expected from a study of this nature, many themes have emerged, the extant literature expanded, but at the same time, new avenues worthy of further exploration opened. Stemming from these findings, this section therefore addresses what the data suggests to be the most important areas for further research and consideration. Particular attention is paid towards sellers and buyers as organisational actors, and the need to engage with nuanced language, which may have several meanings. This section highlights the three main aspects of research associated with the study objectives of better understanding (1) role identity, (2) marketing communications and (3) linguistic tools. This is alongside two further suggestions of future work to examine the masculinity of discourses used, and the potential to examine naturally occurring discourses from these sales relationships.

The scientist role identity has been shown to be a pivotal part of how the respondents in this study undertake their selling and buying activities, and while some ‘answers’ have been provided, there is still much to unpick. Of particular interest to future work is to better understand the ‘journey’ that laboratory-based scientists take upon leaving their ‘traditional’ employment to work in a business organisation. While the study of Jain, George and Maltarich (2009) has shown elements of identity hybridity for academic scientists undertaking business roles while in academia, and this study has shown how role identity hybridity is used for scientists in commercial organisations, other aspects of these challenging role changes still require elucidating. In particular, how individuals undertaking this transition from academic or industrial laboratories, discursively negotiate and build their new identities as hybrid scientist sellers and buyers. With increased access to these organisations, and set against a strong desire from the CEOs of some of the respondent organisations used in this study to gain greater insights into the how and why of discursive identity, this is a suggested follow-on from

this study. Potentially carried out through a longitudinal study, insights may well be drawn out from my immersive engagement with individuals potentially 'transitioning' from a scientist to a hybrid scientist seller/buyer, tracked through their discourses. This may offer much to the debate of whether new identities build on already held identities (Jain, George & Maltarich, 2009) or whether it is better to consider this as through the flicking of a switch from one identity to another (Ebaugh, 1988; Hoang & Gimeno, 2005).

Marketing communication is a vital part of sales relationships, and problematically, can result in much misunderstanding and poor sensemaking with high technology products, which has been highlighted within this study. Appearing critical to the legitimacy of respondent discourses as sellers and buyers is their belief that they have a priest-like status as scientists (Forshaw, 2012). Being able to demarcate who is an insider based on what they say (Nero, 2015) has been linked by these respondents to the use of technical terminology, which can increase or decrease cultural closeness. While these are important findings from this study, elucidating how these aspects of language use are negotiated is worthy of further investigation. Understanding these discursive practices, may offer much insight into the 'what', 'how' and 'why' of the language used in face-to-face spoken marketing communications. More simply, what words are used beyond 'nano' to create legitimisation as a priest-like group, and how might this vary between a chemist seller and biologist buyer for example. This has the potential to be fed back into management recommendations, where certain terminology may act as discursive 'bricks and mortar' to induce homophily and legitimisation, within the 'walls' of the sensemaking 'house' so constructed in high technology markets.

Linguistic tools are an important part of sensegiving and sensemaking, themselves critical parts of organisational life (Daft & Weick, 1984; Krush et al, 2013). Consonant with Weick's seven sensemaking properties, this study has shown the significance of SF as a cultural resource to be drawn on and discursively used via linguistic tools. While the discursive use of SF has been examined in other academic business arenas for inceptive creativity for R&D product development (Schwarz, 2011; Johnson, 2011), the study of the use of

fiction on managers' talk has been relatively rare in management studies (Hansen et al, 2006; Jermier, 1985; Taylor, 2000). A greater exploration of SF linguistic tools may have much to offer how sellers and buyers live their organisational roles, drawing on both fictional and factual aspects of their experiences. This will fit with a sensemaking perspective, where future product based discourses are drawn on to make sense of products being bought and sold in these sales relationships. Of particular interest is how people constructing differently nuanced scientist identities might draw on different discursive SF linguistic tools to make and give sense, fitting with how individuals see themselves, see others, and perceive how others see them (Lawler, 2013). Practically, this will involve digging deeper into the use of these discursive tactics to better understand sensemaking, potentially with the respondent organisations who want to continue this research.

Stepping beyond the three research objectives, there is a potential to more fully consider the aspect of masculinity shown throughout the collected discourses, as unintentionally, all respondents in this study are male, with themes of masculinity being common throughout much respondent discourse. Masculinity and feminity re considered at a relatively minor level throughout this study, with other themes being given greater prominence. For future work however, this area could well be expanded to more fully consider the presence of overt masculinity and absence of feminine discourses.

Looking at this in more detail through the lens of potential future work, at a simple level, respondents always refer to the masculine in general discourse, and for example 'getting the right man for the job', 'being a good guy', 'a man's role' and 'a position for a man'. Thus the roles of selling and buying as well as those extending into the wider organisations are also constructed as male activities. While it is well recognised that some scientific professions and commercial roles can be male dominated (National Science Foundation, Women and Persons with Disabilities in Science, 2007), with a predominantly masculine culture (Robinson & Mcllwee, 1991), there is still much to elucidate. Areas for consideration include the discursive tactics used by women scientist sellers and buyers, to position their identities, and at what level they centralise or hybridise the identity

of the scientist, and the underlying reasons why. In other words, is there a simple replication of strategies shown by male respondents in this study, by potential female respondents? Moving beyond these aspects, it is worth considering the study of Settles, Jellison and Pratt-Hyatt (2009), where women are stigmatised by men as non-legitimate members of the scientific community. Within this study, male respondents suggest that women are not legitimate members of the scientific community, but it is noteworthy that this appears to be a discursive tactic to attack and delegitimise any potential competitor. Highlighting this, and as stated by the SME CEO (respondent number 1) 'Anyone in my way will get some stick…and will be attacked, and I'll use anything and say anything to achieve what I want'. Finally, with male respondents heavily utilising SF and militarism to give and make sense, an investigation can be made for any gender difference between cultural references and linguistic tools used by female scientist sellers and buyers.

Finally, it should be acknowledged that, throughout this study, limitations were placed on the interactions between the respondents and myself, which focused data collection to being through interviews. This meant that at the time of data collection, obtaining so-called 'naturally occurring' discourse from sales meetings was not possible. However, as trust has apparently increased between representatives from respondent organisations and myself, it may now be possible for naturally occurring sales discourse to be examined. This move is alongside shifts by the more reflexive managers in respondent organisations to viewing discourses as more than 'just talk'. While not uniform between all organisations, as my study progressed I have observed that there is an orientation towards perceiving spoken discourses as a currency of organisational life, and a growing recognition of the value of understanding this aspect as it pertains to selling and buying. In line with this, there is a positive acceptance of these findings by the majority of organisations engaged with, which has resulted in an open invitation by eight respondent organisations to carry out further research into selling and buying.

Methodologically, numerous further qualitative techniques are possible, but with the invitation for further research from some of the respondent CEOs,

ethnography is considered particularly pertinent to follow on this study. In this approach sellers and buyers can be followed throughout their daily organisational activities, following on from the work of Mintzberg (1973), and as used in various management studies (Perlow, 1999). While more commonly used in B2C studies (Heisley & Levy, 1991), this method has found some use in marketing (management) and sales based research (Hohenschwert & Geiger, 2015) but with much still to elucidate about high technology sales relationships concerning what sellers and buyers say and what they do in their day-to-day activities.

7.8. Personal Reflections

Before undertaking this study, my background had been within and utilised a natural sciences perspective, with a limited use and understanding of qualitative methods. From the beginning of this study I experienced much anxiety related to how my identity might be perceived by others and indeed myself from potentially 'becoming' a social scientist. Having criticised subjectivist social science methods in the past, I felt trapped within prior discursive identity-based constructions of what it is to be an objective or subjective researcher, giving me much to negotiate throughout this PhD. Simply, and at the start of the study, I preferred the identity of an objective natural sciences researcher in comparison to a subjective social sciences researcher. This can be linked to comments made by the respondents within this study, who preferred to argue that their identity was enhanced by being natural scientists, which was something I also felt. Thus any move to being considered anything other than an objective natural sciences researcher was met with some trepidation and increasing anxiety.

I was particularly concerned about how my natural sciences colleagues within the sponsoring company and clients outside of this company would view my pursuit of a marketing PhD and me being viewed as a social scientist. In principle, my colleagues and I had all readily accepted and welcomed the academic pursuit of marketing but had poorly prepared ourselves for my journey towards being a social scientist. This was something that was embedded within

not only a different research paradigm but grounded within a different ontology, discursively brought to life.

My anxiety appeared highest at the beginning of the study, creating many discursive challenges for how to detail the methodological aspects of the PhD, which if not managed 'well' could have led to a loss of standing and respect within the sponsoring company. Principally we found ourselves in a paradoxical situation because my colleagues and I feared an erosion of my scientist identity in and outside of the sponsoring company, while also desiring insights from the marketing PhD and from me becoming a social scientist. At worst, we feared an erosion of my identity as a scientist, eroded by myself and others, and the potential for me to be othered through what might be considered a rejection of science on my part. Thus like the respondents in this study who had moved from one role to another, I too had to discursively negotiate my identity. However, unlike the respondents I was moving between two organisations, one the sponsoring company and the other Durham University. Operating within and between both organisations heightened my anxiety as I felt actors from both organisations were examining my discourses.

While there were clearly challenges for me to engage with this PhD, it must be reiterated that the sponsoring company and I had recognised that attempting to capture social life using positivist methods can be problematic, particularly when engaging with organisational discourses. This study was thus undertaken with a growing openness on my part to using methods based within a qualitative research paradigm, with my anxiety decreasing over time. Throughout this study I became more aware that my own interaction as 'the researcher' was perhaps just as pivotal to the research findings and conclusions drawn, as with the respondents and their discourses. This shifted my notion of objectivity and compelled a direct engagement with my role as a subjective researcher and prompts the writing of this section of the PhD.

Throughout this study, over the past three years, my opinions on many aspects of organisational life and the value of discourse, has, like with those of my respondents shifted considerably. In many ways, one of the greatest challenges in

undertaking this study was in stepping away from attempts to statistically analyse all aspects of organisational life, including selling and buying. Having experienced this strategy of 'statistical analysis for everything' and argued for it over numerous years, this study demonstrated the value to me of a discourse analytic perspective for examining organisational lived experiences. The findings from this PhD have resulted in significant management changes being implemented within the R&D organisation that I manage. Specifically, I have attempted to create a value for discourse and talking within the organisation that was often missing before this study was undertaken. This has been linked to attempts to better understand our role identities, where all organisational members are encouraged to more freely discuss challenges they feel to their identities, and create a culture of openness. With every member of the sponsoring organisation holding a PhD in science, and prior to this study being 'committed positivists', this has been no small undertaking. It has however facilitated what I consider more meaningful discourse within the organisation and in selling and buying activities, particularly for the simplification of technical discourses and utilisation of linguistic tools to aid in sensegiving and sensemaking. It has also created an openness to engage with other ontologies other than positivism, and to uptake and author discourses from subjective methods within the social sciences.

Finally, and coupled with the suggestions for future research as detailed in the previous section, it is my intention to carry out research into my own organisation to better understand the challenges we face with nanotechnology R&D, selling and buying, particularly where sensemaking is problematic. Using the findings from this study, the important highlighted themes of linguistic tools and cultural resources will be examined alongside how we currently attempt to give and make sense, to facilitate shared meaning and understanding in our day-to-day high technology related activities.

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Appendices

Appendix A: The Physicality of Nanotechnology

Nanotechnology refers to a collection of pervasive materials and products that 'exist' at the nanoscale i.e. between ten million and one billion times smaller than a metre (Roco & Bainbridge, 2001). There are three nanotechnology material classifications, which include, (1) nanoparticles, (2) thin-films, and (3) carbon nanotubes and buckminsterfullerenes. The segmentation into three classes of material is based simply on the number of dimensions that the material/product has at the nanoscale and its elemental composition. The characteristic of all nanotechnology materials is that they exist in a size between atoms/molecules and larger bulk materials (with larger bulk materials being able to be seen by the 'naked' eye or through an optical microscope) (Nel et al, 2006).

The first nanotechnology material to be considered is nanoparticles, which are 'ultrafine particle[s] with lengths in two or three dimensions [between] 1 nanometre and 100 nanometres' (ASTM, 2012). They can be composed of inorganic (metal) or organic (carbon) materials, which can be used in a variety of fields, including electronics, pharmaceuticals, cosmetics, energy and catalysis (Auffan et al, 2009). Figure A1 shows nanoparticles with different sizes and shapes, which will have different applications based on these physical features.

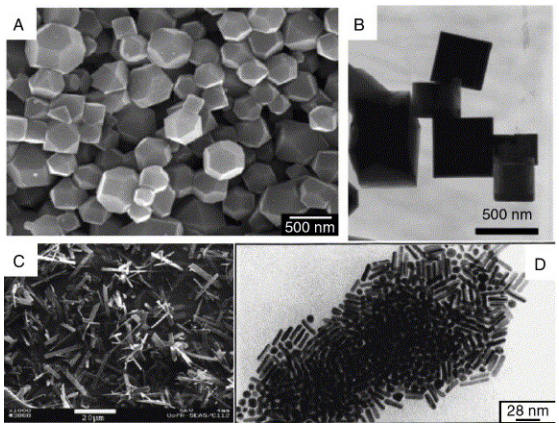


Figure A1. Nanoparticle images – showing different sizes and shapes (Eastoe, Hollamby and Hudson, 2006: 10). In this study, nm refers to nanometres.

The second nanotechnology material of interest is thin-films. 'Thin-film technology is based upon the production of sub-nanometre to micrometre sized continuous layers' (Dean, 2012: 7). Nanotechnology thin-films have x- and y-dimensions, which can be any size, but have a z-dimension less than 100 nm. Thin-films (like nanoparticles) can be composed of inorganic or organic materials and can be made into a wide variety of shapes. Thin-films have found a wide variety of uses but predominantly as coatings, with product development focusing on antimicrobial coatings (Dean, 2012) and electromagnetic storage (Bogart et al, 2009). Figure A2 shows two different thin-film types.

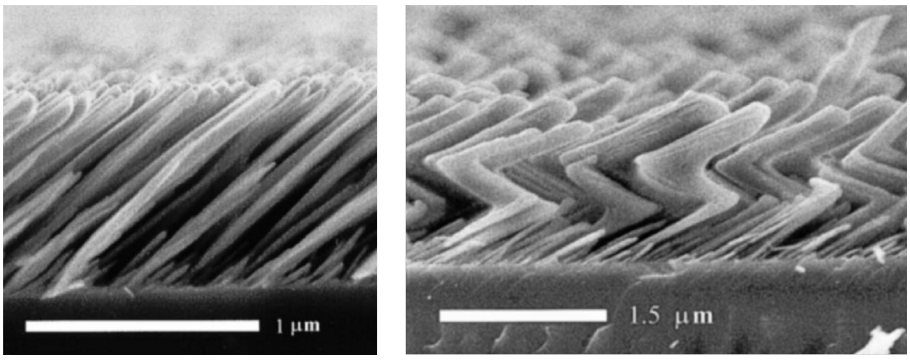
xxxx 

Figure A2. Thin film images – showing different architectures (Vick et al, 1999: 91-92).

Finally, there is the third class of nanotechnology materials, which are composed of carbon only, and is segmented into carbon nanotubes and buckminsterfullerenes. Nanotubes have diameters that range from a few nanometres to 100 nanometres, with lengths up to a few micrometres (Monteiro-Riviere & Inman, 2006). They have been found to be beneficial to fields including electronics (Bandrau, 2007), biomedical engineering (Harrison & Atala, 2007) and structural integrity (Liu et al, 2005). Nanotubes offer superior mechanical, chemical and electrical properties, which have made them appealing. It is not however just nanotubes that are of interest for nanoscale carbon materials, as buckminsterfullerenes ('buckyballs' for short) are also gaining increasing interest, but have found less commercial usage in comparison to nanotubes. Buckyballs have so far been linked with the potential for chemical separations (Fukuda et al, 2011), improved photocells (Fleck, 2009) and superconductors (Sood et al, 1992). In Figure A3, a schematic is shown depicting a carbon nanotube and a buckyball.

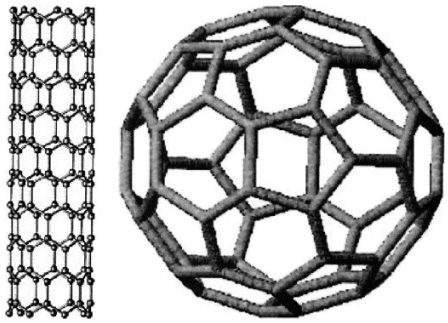


Figure A3. Schematic of carbon nanomaterials – showing a single wall carbon nanotube (left) and buckyball (right) (Hughes, 2005: 353).

One of the main perceived advantages of nanotechnology materials is based upon their relatively large surface area in comparison to the internal area of the material. Relatively, the surface area of materials increases in relation to the internal area when materials are reduced in size, which is commercially exploited in nanotechnology. This can reduce material costs and material activity, which can be coupled with an ability to tailor physical properties of the materials (Jain et al, 2008) and produce unprecedented properties that differ from larger bulk scale materials (Okuyama & Lenggoro, 2003). To further understand nanotechnology beyond viewing it purely as a size or elemental related phenomenon, the following sections consider defining nanotechnology, as well as the socio-linguistic constructions of nanotechnology.

Appendix B: Letter Sent to Prospective Respondents

The letter sent below, was sent to sellers and buyers either known to me or through network contacts I have:

Page 1 Date

Dear Sir/Madam,

You are regarded as an industrial expert in selling and/or buying nanotechnology products. I would like to ask for your support in research I am carrying out for a PhD in Durham University Business School. The title of this research is: 'how do marketing communications influence nanotechnology sensemaking in B2B sales?' I would like to carry out in depth interviews with you, at your convenience. All interviews will be confidential and anonymised, with no link to you or your organisation. If you are in agreement with either yourself or members of your organisation taking part in this study, please sign this document on your letterhead and e-mail it to me at a.k.dean@durham.ac.uk

Organisation:

Address:

I/We hereby agree to support this research in the form of an in depth interview to support the production of a PhD on the following subject: 'how do marketing communications influence nanotechnology sensemaking in B2B sales?'

Name: Date:

Signature:

Position in organisation:

Appendix C: Ethical Considerations, Data Storage and Protection

I undertook all research in line with the rules, ethics and regulations of Durham University and Durham University Business School. All research processes were carried out in what I perceived to be a professional manner, and information collected from interviews was recorded via audio digital recording equipment, and was stored in accordance with the Data Protection Act 1998. All interviews were transcribed for analysis, with transcribed data also being stored in accordance with the Data Protection Act 1998. Beyond data protection, information collected from interviews can be protected under intellectual property laws, including, patent, copyright and trade secret. Information protected by these laws was made accessible through non-disclosure agreements (NDAs) with the respondent companies. All information was anonymised to protect the companies and interviewees. To protect interviewees, all interviews were carried out after interviewees had signed informed consent forms, shown in Appendix B. This followed the suggestion of Saunders et al (2009) who argued that organisations are less likely to cooperate with research that negatively impacts upon their business activities, ergo necessitating the protection of sensitive information. In line with the suggestion by Easterby-Smith et al (1991), the amount of time and resource required from interviewees was detailed in advance of interviews and was kept to a minimum. It was made clear to interviewees that data collected from interviews would be made available to each interviewee upon request.

Appendix D: Interviews: A Developing Process

The interview process evolved and adapted over time as I gained a greater understanding of my role within the interview process and attained more experience. This journey is demonstrated by three interview extracts with different self-identified respondents, including two seller/buyers from SMEs and one Buyer from a MNE, which occurred throughout the duration of the interview-stage of this study. The main question being examined in these three interview excerpts is from Table 3.2 in Section 3.3.1 and is: 'Could you tell me about selling/buying within this company?'

Interview Extract 1: The Initial Interview

Interview with the CEO of a nanotechnology R&D Company

In this initial interview, I predominantly used more defined turn taking, with limited interaction with the respondent. This took the form of asking a question and enabling the respondent to answer with limited interruption, although as the interview progressed and as I became more relaxed, a more 'natural' style of turn taking occurred. By using a more rigid style of questioning at the beginning, it might have suggested to the respondent that there was a lack of time to answer and provide more detail, although the conversation did last for 46 minutes. There were clear opportunities missed in this interview to draw out more information that the respondent had led me to but I had not taken up on. An example of this can be taken from the final comment by me saying, "I see" when a more nuanced approach might not have closed the door on further information being drawn out. Importantly, although prompting occurred less in the beginning of this interview, the respondent appeared comfortable to talk with limited interruption. Where I participated, the comments were to facilitate further respondent speech on an area being discussed. Even though this was the initial interview, the respondent was allowed to dominate the discourse.

Examining the transcription, my nervousness resulted in a quick linkage between the first and second question, in that upon the respondent having finished answering the first question, I linked the questions by the use of 'ok' and moved straight on to the second question. Again, this may have created an impression of a shortage of time to engage with the interview.

Excerpt from The Second Question:

I: Ok, well could you tell me more then, based on your experience of selling and buying within this company?
R: Ah well, and now this is a very interesting question, and rather comically, and there is rather a lot of truth in this, but, first of all, we try to buy as little as possible, simply because buying is quite expensive to do so. This strangely enough drives our interest in nanotechnology, er… which is to be able to reduce our costs, as we can use less of things. For instance if we were doing any kind of chemical synthesis or mammalian cell culture, it would cost an absolute fortune. We just couldn't afford it! Er… so with nano we can do a lot of what we need to do with very small quantities, which is cheap! The physical aspect of what we do is very cheap! Er… and again, our selling, I mean our selling and buying, nano is pivotal.
I: I see.
R: We sell anything within the remit of biological nano and stay away from chemical nano as we just don't have the expertise and a lot of other guys do it far better! They are far more kitted out. In some ways its about where we feel we can maximise our resources and knowledge, so again, back to bio-nano!
I: And the buying and selling?
R: I suppose that looking at it realistically, ah… I tend to do most buying and selling, which is expertise driven. Its difficult to find to find people who have an overview in a technically complex area like nanotechnology. And its just not easy to find people who can grasp chemically what we need, biologically what we need, and understand the business aspects.
I: Its difficult to…erm…find people who can do buying and selling?
R: Yes! Yes! Impossible at times! Getting…umm…people capable of doing buying and selling, in high tech is hard, just hard! I mean, there are loads of people talk about it, say its easy, but in practice, in practicality, it's hard. Plus, who would want to do it? So you are a scientist say, you have to learn buying and selling! Or, you are business fellow and then you have to learn some science. And I mean, not just a bit, but the techie stuff, answer questions on it! Who wants to do this? Actually, no one! But this is a shame see, just a shame, as its fascinating.
I: But you have someone to do this?
R: Yes me! People don't understand this. Why would the man who runs the company buy and sell? Several reasons, I don't trust anyone else to do it. Doesn't take much time, and we don't buy…or sell much. You know who Arkwright is?
I: The only Arkwright I can think of is from Open All Hours.
R: Exactly who I meant! We are a small company. If I ran a multi-billion pound corporation I wouldn't do this. But like Arkwright, people know me and

we are like a small shop. Everyone knows us…me…and they want good customer service. They like buying from the guy in charge. Its like branding, I stand behind what we sell. Although I want to make this clear! I do all the negotiating for buying, selling, but I don't physically place the order. Its important not to, it reduces my perceived power if I'm filling paperwork in for orders.
I: I see.

Interview Extract 2: The Second Interview

Interview with the Buying/Selling Manager of a nanotechnology R&D Company

In this the second interview, I focussed more on filling in gaps by more open and expansive interview discourse, particularly where further information was perceived as potentially informative. The following statement shows this: 'Relationship activities? Could you tell me a bit more about the practicality of this…as I'm not quite sure what you mean?' This is an evolution of engaging through questions from the first interview, where the question would have been limited to 'Relationship activities?' While the first interview had a much wider scope for questioning, it could lead to discourse deviating substantially from the main themes. In this, the second interview, the additional comments and question were added to focus the question to a desired area 'the practicality' but not to lead the respondent to an answer.

When I felt that discourse had moved away from the central theme, the questions of importance were asked a second time. Importantly however, and to avoid appearing that there was a lack of time to respond or that there was negativity associated with re-asking a question, a softer introduction was used for the same question i.e. 'Well we will no doubt come back to some of the aspects later, but having said all of what you have ah said, [softer introduction to the following question] could you tell me about your background and how it relates to selling and buying within this company?'

Excerpt from The Second Question:

I: Relationship activities? Could you tell me a bit more about the practicality of this… as I'm not quite sure what you mean?
R: Of course, and very simply it erm…means that I am the single contact between other organisations for buying all high technology goods and at the same time selling different products to different companies. I'd argue this is a good thing as it means I'm pertinently placed for the transfer of all knowledge and communication in and out of this company for what we buy and sell. Although [laughs] it can be a problem when I'm on holiday!
I: Yes, I can imagine that it would be…what do you do in these cases?
R: Typically I buy everything we need in advance of my holidays, and for selling…well that works a bit differently you see. We typically, typically sell nanotechnology goods directly from our R&D cycle. So, a client wants something unusual, we only sell bespoke you see! So we do it, we fire up R&D, quickly cycle through and sell the product. So in a way, we know in advance what we need [laughs] and we don't have many customers, and the lead time from discussion to sale can be quite lengthy, so in a way, I get holiday, as I avoid being away during this period of getting to grips on both parts of what they want, you know, the customer, and what we can sell!
I: Ah I see, and yes this makes sense actually. Well we will no doubt come back to some of the aspects later, but having said all of what you have…ah…said, could you tell me about your background and how it relates to selling and buying within this company?
R: Mmm…yes…funnily enough I'm a scientist, a chemist. I did my time at uni…erm…so I did a bachelors in chemistry, stayed around for another year for a masters. They told me it would help me get a job…and it did I suppose. People like me having multiple qualifications…Or so they say!
I: Who likes you having qualifications?
R: [Laughs] Anyone without science qualifications! People take comfort in me, my supposed knowledge [Laughs]. Ok, but more seriously…more…seriously…I sell and buy nano, and this has a techie requirement [Winks]. Insider knowledge you see, I'm a scientist, and other scientists like this. They trust me, [Laughs] a hell of a lot more…erm…than non-scientists. Y'know the type? Scientists don't trust product claims bout products, the sciencey claims, by marketers, sellers…anyone who doesn't know what an atom is!
I: This is fascinating…ah…are you saying that scientific knowledge is important in what you do?
R: Yes! Yes! One hundred percent! Couldn't do what I do without it! Its all about being legit, sorry…legitimate. So as a scientist, other scientists like to buy and sell with me, I'm one of them, although I'm also…a…well I buy and sell nano. And people who aren't…erm…scientists like me too, as being a scientist, I'm seen as legitimate. Not faking what I say, you know?
I: Ah…do you think it makes a difference you being a scientist, and doing buying and selling? I mean as opposed to being someone who isn't a "scientist" [Finger movements] but has…how to say this…someone who has a good knowledge of science but is not a scientist?
R: I think you need to be a scientist to speak about science. [Laughs] even if you speak badly! It legitimizes and gives a greater presentation of truth. So, if I sell, people trust me as I know what I'm talking about.

Interview Extract 3: The Final Interview

Interview with the Buyer from a multinational science company

In this the final interview, I made a greater attempt at a more natural conversation style, while still engaging in questioning. While it is accepted that interviews are unlikely to be truly natural, I felt that I had become more embedded within the interview process, and while not leading the respondents, I tried to create a more supportive and conducive environment for respondent discourse. This is demonstrated by my following statement 'It is becoming…ah…clearer. I really want to understand what you mean though. Can you tell me more?' I hoped that by stating a need to understand what the respondent meant, coupled with a potential for the respondent to not answer, I moved beyond my discursive style in the initial interviews, which more simply posed questions to the respondent. In this way, the respondent was afforded a greater level of agency in spoken discourse.

Importantly, the final interviews, of which this was the last, had moved to allow a broader scope for respondent discourse. Thus the respondents with initial theme and question driven discourse were encouraged to produce discourse that they felt was relevant. Whereas earlier stage interviews had allowed respondents to direct discourse, I unintentionally more hampered their discourse in comparison to later interviews. I thus used questions to explore the suitability of new areas to explore such as 'I'd really like us to look more at this aspect if this is ok?' This was central to the production of respondent discourse, where I attempted to support respondents to speak freely, but allowed the respondents to move onto a different question or draw an interview to a close at any time. An example of this is given by my comment 'Please remember that we can draw an end to this interview at any time'.

Excerpt from The Second Question:

I: Hmmm…ok, and this is interesting! Can we talk a bit more about how buying and selling occurs, is carried out in your company?
R: No…problem…As I mentioned earlier, I have a clearly defined role in this company. We all do! We are, are a large, very large company. In turn, this…means that we all have designated roles. Jobs! For example, I am a buyer. This is my job title, and this is what I do! All buying is carried out by buyers, all segmented, very clear, very concise and this reduces confusion Do you understand?
I Yes…I think so, but in practicality, what does this mean?
R: Ah, yes well it is as one might think! As a buyer I buy. If you worked for us you would do what you would do. It really is that simple.
I: I would do what I would do?
R: [Laughs] ok not very clear after all! Well let's say you are an accountant you would do the accounts. You are a chemist, you would do chemistry. Biology, you would do biology. Understand?
I: It is becoming…ah…clearer. I really want to understand what you mean though. Can you tell me more?
R: Yes of course…It is not particularly very difficult. We are quite compartmentalised in what we do. I mean we cross over with what we do, but…but…but we are like a colony of ants. We all have specific jobs and we do them. This is what working here has taught me. I could be wrong, but it is what I see, and what my life is here.
I: And your job?
R: Well I am a buyer! I buy! Its what I do.
I: And what does this entail?
R: Oh I see! [Laughs] I understand what you mean now [laughs] Well as a buyer I buy technology products, parts, constituents, call them what you will. I manage the area of nanomaterials. Odd really, that I am called a manager as I only have myself to manage. It pays more though [Laughs]. In practical terms [lowers voice] since this is what you seem to be after. I manage myself and buy what we need for our products. Usually from SMEs, they make it, we buy it. They are good guys, cheap effective. All scientists too usually! Can't be a bad thing!
R: And how does this work?
I: We have a close relationship with them. With their sellers. But they are all scientists so this is easy. Very odd, very odd companies really, and not at all like us. But different can be good!
R: How do you mean?
I: Well look at me, I am a buyer, it is what I do. I don't buy anything other than nanomaterials and certainly do not sell! But…but they, they do more. So let me think, ah yes! There sellers are a lot more hands on! So they buy too. They really get it! Knowledge coming out of their ears, great to speak to and work with. But so little resource, trapped without it. I suppose for the likes of us this is good, as to be honest we can exploit this. We like them, but as close as we are, we do…do tend, hmmm, yes we do tend to exploit them. Erode their prices, always want more than we pay for. But this is business though! We have to do this?

R: You have raised a really interesting point, and I'd really like us to look more at this aspect if this is ok? Please remember that we can draw an end to this interview at any time.

I: I'm happy to answer! You know, I really do not get the chance to talk about these areas without higher management obsessing about the cost. Well I mean, I talk all the time, but it is not introspective, it is very much driven to output and achieving.

Appendix E: Content Analysis of Overt Themes

Key: ✓ Found on 1 – 2 Transcript pages; ✓✓ Found on 3 – 5 pages; ✓✓✓ Found on > 5 pages.

Theme	Respondent												
	CEO	Buy / Sell Mgr.	CTO	MD	CFO	CTO	Buy / Sell Mgr.	Seller	Seller	Seller	Buyer	Buyer	Buyer
Case	SME Seller-buyers							MNE Sellers			MNE Buyers		
Self-ID.													
Buyer	✓	✓	✓	✓✓	✓	✓	✓	✓✓	✓✓	✓✓	✓✓✓	✓✓✓	✓✓✓
Seller	✓	✓	✓	✓✓	✓	✓✓	✓	✓✓	✓✓	✓✓	✓✓	✓✓	✓✓✓
Buyer / Seller	✓✓	✓✓	✓	✓✓	✓✓	✓✓	✓✓	✓✓	✓✓	✓	✓	✓	✓
Scientist	✓✓✓	✓✓✓	✓✓✓	✓✓✓	✓✓✓	✓✓✓	✓✓	✓✓	✓✓	✓✓	✓✓	✓✓	✓
Marketer / Seller	✓	✓✓	✓	✓✓	✓✓	✓✓	✓✓	✓	✓	✓	✓✓✓	✓✓✓	✓✓
Science Ed/Train.	✓✓✓	✓✓✓	✓✓✓	✓✓	✓✓✓	✓	✓✓	✓	✓✓	✓✓	✓	✓	✓
Business Ed/Train.	✓	✓✓	✓	✓	✓	✓	✓	✓	✓✓	✓✓	✓✓	✓✓	✓✓
Selling / buying													
Buying products	✓	✓	✓✓	✓	✓	✓	✓✓✓	✓	✓	✓	✓✓	✓✓✓	✓✓
Selling products	✓✓✓	✓✓	✓✓	✓✓	✓✓	✓✓	✓✓	✓✓✓	✓✓✓	✓✓✓	✓	✓	✓
Auton selling	✓	✓✓✓	✓✓✓	✓	✓	✓	✓	✓		✓		✓	✓
Auton buying	✓✓	✓✓	✓✓	✓		✓	✓			✓	✓✓	✓✓	✓
High Techn.	✓✓✓	✓✓✓	✓✓✓	✓✓✓	✓	✓✓✓	✓✓✓	✓✓	✓✓✓	✓✓✓	✓✓	✓✓✓	✓✓
Nanotech.	✓✓✓	✓✓✓	✓✓✓	✓✓✓	✓✓	✓✓	✓✓	✓✓✓	✓✓✓	✓✓✓	✓	✓	✓
Respondent tech knowl	✓✓✓	✓✓	✓✓✓	✓✓✓	✓	✓	✓✓	✓✓	✓✓	✓✓	✓	✓✓	✓✓
Buyer tech knowledge	✓✓✓	✓✓	✓✓	✓✓	✓	✓✓	✓✓	✓	✓✓	✓✓	✓✓✓	✓✓✓	✓✓✓
Seller tech knowledge	✓✓✓	✓✓	✓✓✓	✓✓	✓✓	✓	✓	✓✓	✓✓	✓✓	✓	✓✓	✓✓
Marketing comms.													
Spoken	✓✓✓	✓✓✓	✓✓✓	✓✓	✓✓✓	✓✓	✓✓	✓✓	✓✓	✓✓	✓✓	✓✓	✓✓
Other micro	✓	✓	✓	✓		✓		✓	✓	✓	✓	✓	✓
Macro	✓	✓	✓	✓	✓	✓	✓✓	✓✓	✓✓	✓✓	✓	✓	✓
Respondent comms.	✓✓✓	✓✓	✓✓	✓✓✓	✓✓	✓✓	✓✓✓	✓✓	✓✓	✓	✓✓	✓✓✓	✓✓
Other comms.		✓		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
One-way	✓		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Two-way	✓✓✓	✓✓✓	✓✓✓	✓✓	✓✓	✓✓	✓✓	✓✓	✓✓	✓✓	✓✓	✓✓	✓✓
Sensegive / Sensemake													
Spoken comms.	✓✓✓	✓✓✓	✓✓✓	✓✓	✓✓✓	✓✓✓	✓✓✓	✓✓✓	✓✓	✓✓✓	✓✓	✓✓	✓✓
Linguistic tool	✓✓✓	✓	✓✓	✓✓	✓✓	✓✓	✓✓✓	✓✓	✓✓	✓	✓✓	✓✓	✓✓
One-way			✓			✓	✓		✓	✓		✓	✓
Two-way	✓✓	✓✓	✓✓	✓✓✓	✓	✓✓	✓✓	✓✓	✓✓	✓✓	✓✓	✓✓	✓
Feedback loop	✓	✓	✓		✓	✓		✓	✓	✓	✓		

Table E1. Content analysis of overt themes

Appendix F: Examples of Analytical Coding Protocol

Label	Sensegiving Spoken Communication
Definition	The use of linguistic vehicles to communicate sense from seller to buyer.
Description	Narrative, story telling, science fiction, metaphor, simplification.
Examples	…there are so many stories of nano! …change my tone, use imagery, metaphor, tell stories. But sci-fi is a dual edged sword.
Overlap/Link	Marketing communication, selling, understanding, and product knowledge.
Contrasts	A discourse which suggests a deep level of the underlying science should be known, and communicated through linguistic vehicles.

Label	Scientific Knowledge
Definition	Sellers suggest the need for scientific knowledge and promotion of this knowledge.
Description	Meta-narrative from sellers promoting scientism as a vehicle to sell.
Examples	Science leads us to truth! …its all about the big themes, y'know, science is the voice of reason. People listen to me, I'm a scientist, and what I say is true.
Overlap/Link	Marketing/science communication, promotion, science knowledge.
Contrasts	Marketing as a vehicle to sell.

Label	Product Sales
Definition	Products constructed as being within the arena of nanotechnology.
Description	Nouns – product names, functionality, nanotechnology products.
Examples	I sell nanoproducts, only nano! …products you need to satisfy your needs, nano satisfies your needs. Only nanoproducts will work for you.
Overlap/Link	Science as a super category, marketing communication, scientism.
Contrasts	Suggests that marketing can be reduced to communicating scientific knowledge.

Table F1. Examples of analytical coding

Appendix G: Repertoire Distribution Table

Discursive Theme ('Trees' and 'Child' Nodes)	Overall Occurrence (by paragraph)	Occurrence by Case Context	Occurrence by Participant (H or L – High or Low levels proportionally)
1. Science			
Identified as scientist	297	All	All H
Science as truth	141	All	All H
Science as power	94	All	All H, except MNE buyers L
Scientism	168	All	All H except 1 MNE buyer L
Knowledge is power	307	All	All H
Rhetoric	265	All	All H
Otherness (not one of us)	116	All	All except 2 MNE buyer L
2. Selling/Buying			
Technical vocabulary	245	All	All H
Scientists buy from scientists	76	All	All H
Expertise	109	All	All H
Control	44	All	All L
Fit-for-purpose	38	All tho H in Seller/Buyers	All & H in Seller/Buyers
Real solutions for a real world	50	All	All L
Marketing language as deceptive	63	All	L in Sellers & Seller/Buyers
In person (face-to-face)	79	All	All H
Dyadic closeness via homophily	41	All	All H
Two-way	134	All	All H except 1 MNE Buyer
3. Sensegiving/Sensemaking			
Talk solves problems	182	All	All H
Certainty through science	267	All	All H
Technical words offer truth	99	All	All H except 1 MNE buyer L
Storytelling	70	All	All H except 1 MD Seller/Buyer
Narrative	85	All	All L except 1 MNE Seller
Metaphor	102	All	All H
Reflexive process	29	All	All L except Seller/Buyers H
Words as sense	61	All	All MNE Sellers & SME Seller/Buyers H, MNE Buyers L

Table G1. Repertoire distribution table.

Appendix H: Sample Expansion Analyses

This section of transcribed data is representative of discourse analysis carried out throughout this study. This section is from second interview with a Buying/Selling Manager from within the nanotechnology sector, with the respondent company focusing on R&D. In this section R is the respondent and I is the interviewer.

Sample Analysis One – Interview 2, Excerpt 1, Stanza 9

26	**I:** Ah I see, and yes this makes sense actually. Well we will no doubt come
27	back to some of the aspects later, but having said all of what you
28	have…ah…said, could you tell me about your background and how it relates to
29	selling and buying within this company?
30	**R:** Mmm…yes…funnily enough I'm a scientist, a chemist. I did my time at
31	uni…erm…so I did a bachelors in chemistry, stayed around for another year for
32	a masters. They told me it would help me get a job…and it did I suppose. People
33	like me having multiple qualifications…Or so they say!
34	**I:** Who likes you having qualifications?
35	**R:** [Laughs] Anyone without science qualifications! People take comfort in
36	me, my supposed knowledge [Laughs]. Ok, but more seriously more seriously I
37	sell and buy nano, and this has a techie requirement [Winks]. Insider knowledge
38	you see, I'm a scientist, and other scientists like this. They trust me, [Laughs] a
39	hell of a lot more erm than I do non-scientists. Y'know the type? Scientists don't
40	trust product claims bout products, the sciencey claims, by marketers, sellers
41	anyone who doesn't know what an atom is!

In lines 26-29 I brings a prior theme and question to a close stating, "Ah I see, and yes this makes sense actually", which sought to stop further discourse in this area. Drawing this area to a 'temporary' close was reinforced by I giving an indication that this area could be revisited if necessary, but quickly moving on to ask another question. R addresses the question asked by I throughout the rest of this sample analysis.

The response by R to the question about how his background relates to buying and selling within the company R works for is initiated by a pause "Mmm". R gives a fragmented exposition about his education and self-identification as a scientist (lines 30-33). R starts by stating that "funnily enough I'm a scientist" with an emphasis by R on funnily, which suggests that R perceives something unusual about himself working as a Buying/Selling Manager. There is a repeated

followed up assertion by R as viewing himself as a scientist, and importantly a chemist. Digging deeper, R states his academic qualifications (bachelors and masters), which suggests that R perceives them as important for his current position (which is heavily emphasised and in several points beyond this sample analysis). The significance of having been to a university to study is highlighted by the comment "I did my time at uni", which perhaps indicates the perceived need to attend a university for science-related work. Although self-identification of R appears to come from having studied academic science, it is not without potential mixed feelings by R. R shows this by pausing after saying that he did his time at a university. More than this though is the negative way that R was told he would get a job by what would appear to be someone in a greater position of power than R, and R's response of "and it did I suppose!" It can be speculated on what R meant by this comment, and although not directly asked by I, it suggests that R views his current or past work positions as less than ideal. Alternatively, when coupled with the following statement about "People like me having multiple qualifications…Or so they say!" potentially indicates R's struggle with his background, discourse used by promoters of education he encountered and his current and/or past work positions.

Line 34 sets up a new question from I to R, based on "who likes you having qualifications?" The repeated emphasis by R in the prior stanza had arguably set up this question to aid in the understanding of R's background to buying and selling. Importantly, and although this was a leading question towards background as qualifications, R continually referenced his background to scientific qualifications throughout the discourse. R starts to answer I's question by laughing and quickly stating that "Anyone without science qualifications!" This was quickly stated and with what appeared to be more of a regional accent, than in prior discourse. It is noted that the statement was phrased as being without science qualifications, as opposed to not being a scientist. Perhaps R only regards individuals with science qualifications as scientists (although this was not examined in the discourse). Lines 36-37 suggest that R has an issue with his own knowledge, and potentially that he doubts it, or sees it as a promotion i.e. "…my supposed knowledge [Laughs]". While the next sentence in line 36 suggests that this is a joke by R to refer to his knowledge in this way, the pausing

suggests some difficulty by R in addressing his prior comment. A strongly emphasised statement that R sells and buys nano, which has a requirement of technical knowledge, but with a wink, follows this. Again, I am left to question the seriousness of the need for technical and scientific knowledge in selling and buying as opposed to the promotion and perception of such knowledge.

The importance of being a scientist is again reiterated throughout lines 35-41, but a potential distinction is made between being respected by individuals without science qualifications (which may be non-scientists) and the mutual respect between scientists. Looking at line 35, 'Anyone without science qualifications" are jokingly asserted to like individuals with science qualifications. In lines 37-38, R states that there is trust between scientists (although with laughter, which might be linked to competing discourse produced by scientists in commercial and academic settings). Importantly, R claims that he does not give this trust given to him by scientists to non-scientists. This is a significant distinction of people into scientists and non-scientists, with the prefix non-, perhaps suggesting a pejorative stance towards individuals who have not studied science. This negative aspect of non-scientists is highlighted in lines 39-41, where arguably R sets up a negative claim by stating "Y'know the type" as a prospective vehicle to induce closeness between R and I and communicate the negative view. Importantly, R transcends his own knowledge to speak for all scientists i.e. "Scientists don't trust product claims bout products, the sciencey claims, by marketers, sellers". This is a powerful statement, that, scientists can trust no claim about a science product, unless issued by a scientist, and suggests an element of religiosity in R's views of science. It also highlights a perceived right to speak by R about science by scientists, which is showcased by R's claim statement that only through knowing what an atom is (arguably an expression that technical knowledge is required, not specifically for an atom, but more in general) is important. However, looking at the earlier discourse by R, these statements must be taken in light of his own jokes that the perception of science knowledge was also important. It does raise the question about whether R is promoting a vehicle to barrier those who he claims as non-scientists from selling and buying science products.